

A. S. R. R. Co.

AMERICAN RAILROAD JOURNAL.

STEAM NAVIGATION, COMMERCE, MINING, MANUFACTURES.

HENRY V. POOR, *Editor.*

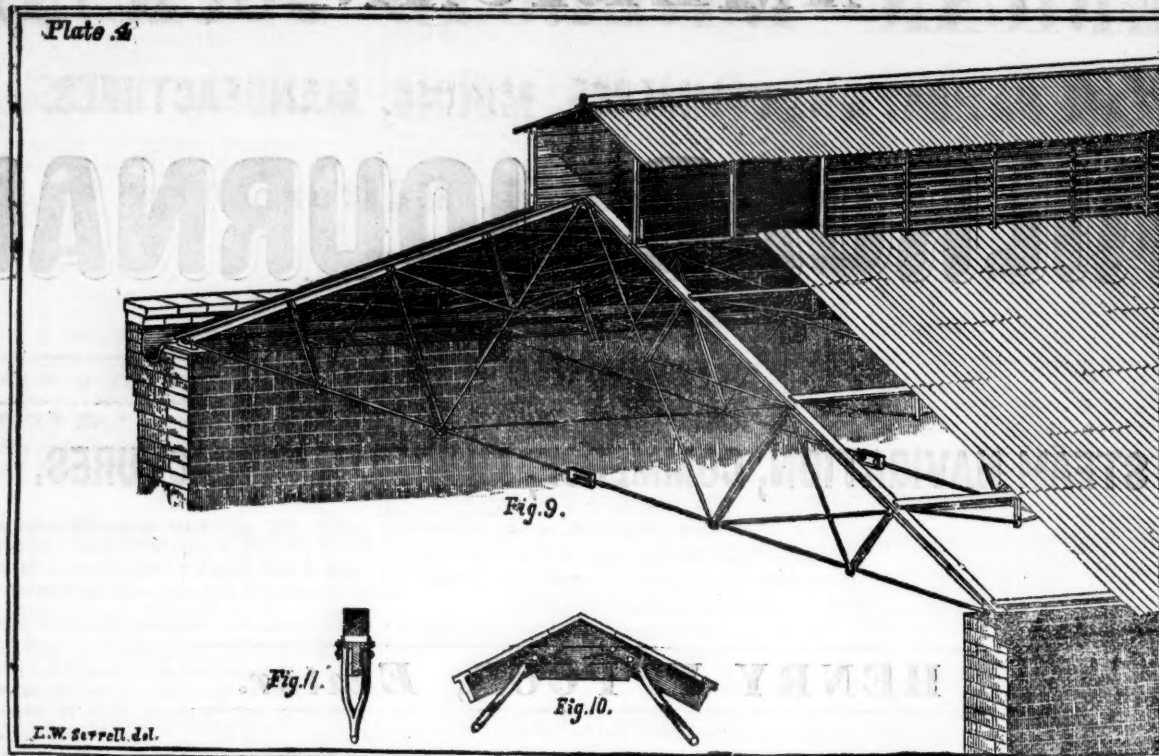
SATURDAY, APRIL 12, 1856.

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ROOFING.

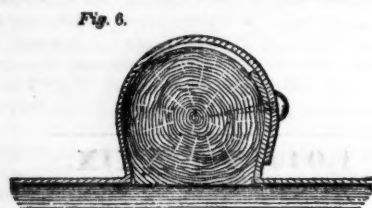


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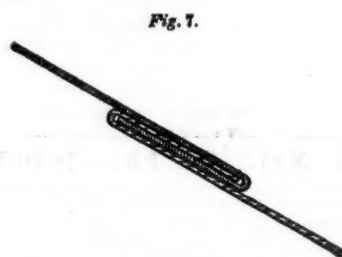
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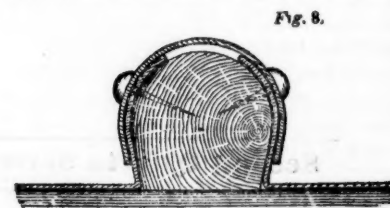
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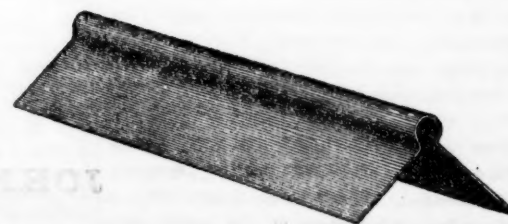
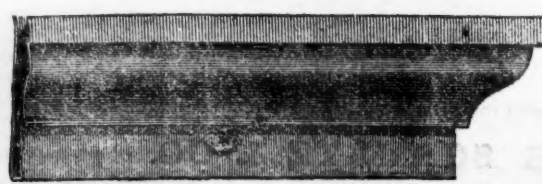


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MARSHALL LEFFERTS & BROTHER,
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SECOND QUARTO SERIES, VOL. XII., No. 15.]

SATURDAY, APRIL 12, 1856.

[WHOLE No. 1,043, VOL. XXIX.]

Messrs. ALGAR & STREET, No. 11 Clements Lane, Lombard Street, LONDON, are the authorised European Agents for the Journal.

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American Railroad Journal.

PUBLISHED BY J. H. SCHULTZ & CO., No. 9 SPRUCE ST.

New York, Saturday, April 12, 1856.

Railroad Management.

N. Y. & ERIE R. R.—SUPERINTENDENT'S REPORT.

The present statement has a value to the Engineer, Railroad Manager and the Statist, quite distinct from its relations to the Erie Railroad. Railroad management is a science, and if there be no elaborate text-books on its general principles, here is a manual of its practice. We are not men worshippers, but we have a profound regard for devotion to duty, when mingled with an amount of talent approaching common sense. We have, in this Report, what every company should possess, but what very few really have. We have a complete field-book of the Erie road. All the location as to curves and grades—all the station houses, bridges, culverts. This work, so long neglected, is now presented. There is no reason why it should not have been given to the public years ago. The Hudson River Railroad Company in its blessed confusion has neglected to give its stockholders such information as this. So, too, the N. Y. Central.

In the midst of arduous duties this Report has been prepared, and the Superintendent of the

road has done what the constructing Engineers seem never to have thought of doing. The Report presents the most accurate detail possible of the cost of operating the road, of the organizations by which it is operated, and of the system by which that organization is governed.

We wish to call the particular attention of some of our whining neighbors to a few extracts. Says Mr. McCallum—

"In my opinion, a system of operations to be efficient and successful, should be such as to give to the principal and responsible head of the running department a complete daily history of details in all their minutiae. Without such supervision, the procurement of a satisfactory annual statement must be regarded as extremely problematical. The fact that dividends are earned without such control, does not disprove the position, as in many cases the extraordinarily remunerative nature of an enterprise may ensure satisfactory returns under the most loose and inefficient management."

While "it will scarcely be expected that we can at once adopt any plan of operations which will not require amendment and a reasonable time to prove its worth, a few general principles may be regarded as settled and necessary in its formation, amongst which are:

1. A proper division of responsibilities.
2. Sufficient power conferred to enable the same to be fully carried out, that such responsibilities may be real in their character.
3. The means of knowing whether such responsibilities are faithfully executed.
4. Great promptness in the report of all derelictions of duty, that evils may at once be corrected.
5. Such information to be obtained through a system of daily reports and checks that will not embarrass principal officers, nor lessen their influence with their subordinates.
6. The adoption of a system, as a whole, which will not only enable the General Superintendent to detect errors immediately, but will also point out the delinquent.

It is very important, that principal officers should be in possession of all the information necessary to enable them to judge correctly as to the industry and efficiency of subordinates of every grade.

To acquaint themselves in this particular, and remedy imperfections without weakening the influence of subordinate officers, should be the aim of officers of the higher grades."

Capt. Swift lays it down as granted that the cost of running a train increases as the square of the speed. Few persons can be found to substantiate this no-

tion with experience. The Erie road does not.—The Superintendent says:

"It has been stated authoritatively, that the cost of running a train is increased nearly as the square of the speed; for the correctness of which, experience will not permit me to vouch."

Concerning the importance of the telegraph:—

"The use of the telegraph is a most important auxiliary in the working of the road, enabling us to advance the progress of the trains, when retarded from any cause, to such an extent as to have lost their rights; as by the rules in force upon this road, trains moving in one direction possess positive rights to run without regard to time, or without reference to any opposing train; and an opposing train, upon reaching a point where by the "time-table" it should be met and passed by a train having a right to the road, is not permitted to leave until the arrival of such train; but, by the use of the telegraph, conductors in such cases may be immediately communicated with, and directed to move forward without the slightest danger of collision; without it, under such circumstances, they would be obliged to remain stationary, or proceed slowly at the most imminent risk.

With a proper use of the telegraph, a single track railroad may be rendered more efficient in preventing collisions than a double track railroad without its aid: as the double track can only obviate those which occur between the trains moving in opposite directions, whilst the telegraph may be used effectually in preventing them, either from trains moving in an opposite, or the same direction; and it is a well established fact deduced from the history of railroads, both in Europe and in this country, that collisions between trains moving in the same direction have proved by far the most fatal and disastrous, and should be most carefully guarded against. I have no hesitation in asserting, that a single track railroad, having judiciously located turn-outs equal, in the aggregate, to one-quarter of its entire length, and a well conducted telegraph, will prove to be a more safe, efficient, and profitable investment than a much larger sum expended in the construction of a continuous double track, operated without a telegraph."

As to general managing, Mr. McCallum says:

"It seems to have been generally conceded that the railroad companies have not the same means of controlling the various items of earnings and expenditures, as are within the reach of persons managing the same business but acting in an individual capacity; and whilst it is a humiliating circumstance that railroad companies have not, in many particulars, conducted their business with the same economy as would have been done

be "paying too dear for the whistle?" We must make the necessary sacrifices to meet our existing liabilities, created under past contracts, which were beyond our control; but would it not be the part of wisdom, to pause, before adding to these liabilities on contracts never under our control? Would it not be well to husband our resources until such time as the securities we have to offer are better appreciated abroad, or the enactment of such laws by our legislature as will make them sought after by our own citizens? These considerations deserve the most careful and serious consideration of those to whom you are about to entrust the interests of this Company, and should they, after such consideration, conclude to suspend or partially suspend active operations in the construction of your road, for the time being, we trust that all will see the necessity and wisdom of the course, and readily acquiesce in what cannot be avoided, unless at too great a sacrifice.

Some further outlay will be absolutely necessary to finish and properly equip the road to Jefferson City, so as to make it complete and efficient for the business that may be offered to it. It will require an outlay of about \$67,000 to finish the balance and fence the road. You also need eight additional locomotives and six more first-class passenger cars; also, some seventy-five hand, cattle and platform cars. The cost of this rolling stock will be about \$200,000. This will fully equip the road to Jefferson City. Its prospects for business are flattering; its receipts show a steady and constant increase. For the present month, the first of its opening to Jefferson City, they will not fall much, if any, short of thirty thousand dollars. A contract has lately been entered into, by which we expect to make a daily connection with a line of packet boats from Jefferson City to Kansas, or, perhaps, to a point still higher up the river. This we confidentially anticipate will nearly double its present receipts. This contract is to go into operation on the 1st of May next. The vast increase of business and travel up the valley of the Missouri since the commencement of this enterprise, must satisfy the most skeptical mind that if the road was completed to the State line, even at a cost of twelve millions of dollars, that it would be a paying investment, in itself considered, while its incidental advantages to the citizens of our State, none could with certainty compute. When the next twenty-five miles are completed, the great physical obstacles to its progress will be overcome. It then traverses, for the most part, an open prairie country, which is in a high state of cultivation, and where the cost of constructing the road will certainly not be one-half as much as the first and second divisions.

The total amount expended by the Company at the date of the last annual report, in the construction and equipment of the road was \$4,970,266 88. The amount since expended is \$2,223,897.86. Total, \$7,194,164.69, of which about \$200,000 has been expended west of Jefferson City, and \$78,215.19 in the construction of the South-West Branch.

GENERAL ACCOUNT.

Interest, discount and commission.....	\$633,943
Contractor's account.....	2,280,321
Graduation and masonry.....	1,348,697
Superstructure.....	1,085,790
Engineering, &c.....	220,533
Land and damages.....	214,964
Office expenses and stationary.....	89,877
Ballasting.....	70,772
Bridges.....	51,797
Shops, stations, and other buildings.....	142,176
Locomotives.....	109,595
Cars.....	159,478
Engineer of construction.....	351,805
Miscellaneous.....	407,000
	\$7,115,949
Construction—South-West Branch.....	78,215
Repairs and running.....	145,188
Miscellaneous—balances due on stock, bills receivable, &c.....	1,316,408
	\$8,655,750

Capital stock subscription.....	\$2,658,000
Capital stock paid up in full.....	1,075,900
Capital stock subscription, S. W. Branch.....	350,000
Pacific Railroad depot bonds.....	90,000
Pacific Railroad anticipation bonds.....	5,000
State of Missouri.....	3,000,000
Bills payable.....	1,227,528
Premium on bonds.....	57,914
Transportation of passengers.....	24,471
Transportation of freight.....	26,043
Income from rents.....	461
Forfeited stock account.....	1,312
Interest scrip.....	8,721
Land grant sales.....	1,713
Land grant rents.....	15
Accounts audited.....	67,121
George R. Smith, agent.....	14,996
Samuel Copp, Jr., Treasurer.....	43,252

Credits.....\$8,655,750

By this exhibit it will be seen that the entire indebtedness of the Company at that date (with the exception of the bonded debt) was \$1,337,828.16, as follows: Bills payable \$1,227,528.41; accounts audited \$67,121.68, and fraction for over draft on bankers \$75,000, (less short county bonds and cash items in his hands \$31,748.07) \$43,178.07.—To meet which the Company have bonds of the State of Missouri \$1,700,000; bills receivable \$74,064.89. And short county bonds and the proceeds of same in the hands of Messrs. Schuchendt & Gebhard, New York, \$97,705.92, and bonds of the town of Hermann \$1,400. Total \$1,873,170. 31. This is exclusive of all subscriptions, and any additional bonds to be issued by the State, whenever the Company shall be entitled to them. But it is not to be disguised, that the Company will have to raise a large amount of money from other sources than the sale of State bonds, to enable it to avail itself of the balance of these bonds, \$1,300,000, for the construction of the Kansas line. Additional subscriptions to the capital stock must be relied on for this purpose. Without these additional subscriptions, and the prompt payment of those heretofore made, the progress of construction cannot but be slow.

The balance due on stock subscriptions are as follows: On the Kansas line, \$778,596.98 of which \$300,000 are conditional. The unconditional subscriptions to the South-West Branch are \$344,581.67.

SOUTH-WEST BRANCH.

After the passage of the law of December 10th, the previous contract with Messrs. A. S. Diven & Co., was cancelled, and a new one entered into with Messrs. Diven, Stencliff & Co., for the construction of that important enterprise. But the uncertainty attending the fate of the law has in a great measure prevented much expenditure on that work. An organization has, however, been kept up on it, and some \$60,000 has been expended on it, which does not appear in the present accounts, the return of the estimates not having been made to this office until after the first of March. The subscription to the capital stock for the construction of this work are mostly in county subscriptions made in accordance with, and under the provisions of the general railroad law. They were made payable in four annual instalments.—The first was due at the commencement of this year. An agent, Mr Lacy, was especially employed to collect these subscriptions, and although he visited every county, we regret to have to inform you that only \$8,233 from the county of Lawrence was collected by him. Nothing has been received from any other county on these subscriptions. Some negotiations are now pending for the more energetic prosecution of this great work. The great depression in State bonds, may, for the present, retard its progress. Should an advance, from any cause, take place, in these securities, this work must move on more rapidly than any other in the State, as it has a more substantial basis than any other of our roads. With \$3,000,000 of 7 per cent. bonds, guaranteed by the State, with the privilege of issuing \$7,000,000 of first mortgage bonds, the whole secured by a grant of

1,000,000 acres of valuable agricultural and mineral lands, lying along the line of the road, and of the road itself, must, in time, commend itself to the attention of capitalists, and secure its construction.

Petersburg and Roanoke Railroad.

This road was the first in point of time, and has been financially the most successful work of the kind, in Virginia. In both respects it has been exceeded by very few lines in the Union.

The Petersburg railroad was projected in 1830, at a time when the railroad and locomotive were "new things under the sun." In the winter of that year the charter was obtained, authorizing the company to build their road from Petersburg to the North Carolina State line. Towards its construction the State subscribed \$160,000. City of Petersburg authorized to take stock. Directory to consist of five shareholders, two of whom were to represent the State. Authorized capital, \$400,000, which might be increased to \$650,000, in shares of \$100 each. Right granted to borrow money, if necessary. After the net earnings should have returned, in dividends, the amount of capital paid in, the regulation of tolls for passengers and freight was left to the Board of Public Works. Several additional measures were subsequently passed for extending aid and otherwise promoting the company's interests. These we shall have occasion to observe in noticing the history of the undertaking.

From Petersburg, its Northern terminus, the road pursues a very direct southerly course, crossing the Nottoway and Meherrin rivers, to Weldon in North Carolina, a distance of 63 miles. At the latter place it crosses the Roanoke by a substantial bridge. For several years, however, their southern terminus was at Blakely, about three miles north of Weldon; their passengers and freight being carried between these places by the Portsmouth and Roanoke road. The long and intense rivalry between the two corporations, however, induced the Petersburg Company to build a bridge and an additional line of their own, which was completed in 1842. At Hicksford, on the Meherrin, the road forms a connection with the Greenville and Roanoke line, the latter connecting with the Raleigh and Gaston, the North Carolina Central and other roads. The main line is extended southward by the Wilmington and Weldon and the Wilmington and Manchester, to South Carolina.

There are no very short curves on the line. The steepest grade, except at the city of Petersburg, where it rises from the Appomattox river, is 33 ft. per mile.

The company were duly organized in the early part of 1830, CHAS. F. OSBORNE being the first President, and MONCURE ROBINSON, Chief Eng'r.

The estimated cost of construction for 59 miles, exclusive of equipment, was \$400,000; and the line was put in operation for about this sum. The superstructure consisted of the usual light flat-bar rail, resting on a hard pine 5x6 continuous sill. The first engines in use were brought from England, and weighed from four to six tons, carrying about as many times their own weight, and running with passenger trains from 12 to 18 miles an hour.

The first 30 miles from Petersburg were opened in October, 1852; and the line completed through

to Blakely on the Roanoke, in August, 1833. The Board declared for that year a dividend of three per cent., and two of five per cent. each for the three years following.

The experience of this company, in regard to the superstructure and machinery at first in use, has been that of so many other lines, both in the Southern and Northern States, that it is almost unnecessary to repeat it. The engines were found more costly and less serviceable than those of a newer description. The track needed heavy outlays, after the first year or two, to keep it in repair. Large dividends had been paid too soon. Additional means were needed, and the usual resort was to petition the State for a loan. Among the other obstacles with which the Co. had to struggle, was competition with the Portsmouth road, which was opened in 1835, and the financial revulsion, in 1837-8. Their depot and other buildings at Petersburg also were consumed by fire, in November, 1836, causing a loss of over \$20,000. In consequence of these, some of their early dividends had to be paid in scrip; and in 1842 and '43, they ceased declaring any dividends whatever.

On the other hand, the Greenville and Roanoke road, 18 miles long, was completed in 1836, and brought a very large addition to the Petersburg Company's business. This line was agreed to be operated by latter, for a certain stipulated amount, which was afterwards changed, to two-fifths the gross earnings. Under the latter regulation, it continued to the latter part of 1855. In 1843, in consequence of the failure of the Portsmouth Company, a large additional business was thrown on the line, and the payment of dividends was accordingly resumed in the following year. Since that date they have declared dividends regularly.

In March, 1836, the stockholders authorized a loan of \$60,000, for finishing and properly equipping the road. The same year two steamers were purchased for running on the Roanoke, in connection with their trains.

The above loan not having been taken, in 1838, another of \$100,000 was authorized. Of this \$34,000 were disposed of. This issue has since been redeemed. A loan of \$150,000, in five per cent. stock, was also received the same year from the State. The rate of interest was subsequently advanced to six per cent. In 1844, this was, by an act of the Legislature, converted into stock, together with \$13,500 interest then due. This made the total State stock \$323,500. In 1848, this was transferred to the city of Petersburg, as a State subscription to the South Side Railroad.

The company commenced to relay the track, in 1841, with a heavier rail. About fifteen miles were laid with the edge pattern, and the remainder with heavy flat-bar. The advantages of this change, enabling them to run at a higher speed, with greater safety, and at much less expense, were immediately felt in the increased net receipts and dividends paid, from the period of its completion in 1848. This flat-bar continued in use till 1849, when a purchase was made of sufficient edge rail to finish the road, which was completed to Weldon, in 1851.

Difficulties with the Portsmouth and Roanoke Company already alluded to, led the Petersburg Company, in 1842, to commence building a bridge

of their own across the Roanoke at Weldon. This was accordingly undertaken and finished the year following, together with two and a half miles of road extending from the bridge to Weldon. Cost of the bridge, about \$53,000.

The whole of these improvements brought the cost of the road, in 1844, up to \$948,574. The capital paid in then was \$769,000. The balance consisted of bonds and notes due at various dates, with \$81,866 net earnings used in construction.

In the same year, a reduction of about 30 per cent. was made on the rates of transportation. This change, though diminishing the revenue at first, is believed to have been judicious, and to have proved advantageous to the company's interests.

The rate of dividend in 1844, when the managers re-commenced paying, was three per cent.; in 1845, five; in 1846, six; and in 1847, seven per cent. In addition to these, appropriations were regularly made to reducing the debt. On the completion of the new track, this amounted to about \$195,500.

The re-opening of the Seaboard and Roanoke (formerly the Portsmouth and Roanoke) railroad, has in some degree affected the company's earnings and expenses, for the last three or four years.

No dividend was paid for the year 1854-5; considerable sums of money having been expended for equipment and reduction of debt.

According to the company's recent report, their gross receipts for the year ending 31st January last, were \$263,874, of which \$133,678 arose from freight, and \$110,495 from travel. The running expenses were \$140,213, or, including extraordinary charges—for interest and machinery,—\$167,576. The gross receipts show a gain of \$60,168 over those of 1854-5, the excess in part arising from the sickness at Norfolk and Portsmouth during the summer. The company's entire indebtedness was \$158,502, or, including wages, &c., \$171,271. During the past year, the indebtedness was reduced \$42,907, in addition to \$19,775 paid for locomotives, passenger and baggage cars, and about \$27,000 for other improvements.

In pursuance of a resolution passed by the stockholders in October last, application was made to the Legislature for authority to issue mortgage bonds, bearing seven per cent. interest. An act was accordingly passed to that effect, with a proviso, however, that none of these should be sold under par. None of these bonds have yet been offered for sale.

For some time negotiations had been going on between the Petersburg and the Greenville and Roanoke railroad companies, with reference to a consolidation of the two interests. After various propositions to this effect had passed between the parties, arrangements were finally concluded in October last, in accordance with authority previously obtained from the Legislatures of both Virginia and North Carolina. The basis of the consolidation was, that seven shares of the Greenville should be reckoned equal to four of the Petersburg, and that the latter should issue such additional stock as would be sufficient for that purpose. The consolidation was carried into effect in November.

The road, for the most part, is now in good order, and is well equipped. Some additional build-

ings are required. It is designed to re-lay the 18 miles composing the Greenville Branch, as early as convenient. Part of the main line laid with a light edge rail, about 15 years since, will also require relaying. Should the issue of bonds be disposed of, the Board feel confident these improvements can be put down in a year or two, and the usual dividends be paid from earnings. The completion of the North Carolina Central to Charlotte will doubtless increase the company's business very considerably.

The rolling stock consists of 15 locomotives, 12 passenger, 5 baggage, 95 freight, and 15 other cars.

GENERAL ACCOUNT.

Road, equipment, &c.....	\$777,384
Re-laying railroad.....	221,997
New engine-houses and omnibuses.....	9,734
Bills and acc'ts receivable, &c.....	31,773
	\$1,040,888
Capital stock.....	\$769,000
Bonded debt.....	40,597
Bills payable.....	55,574
Scrip dividend, due 1864.....	26,915
State of Virginia.....	15,270
Dividends unpaid.....	8,391
Acc'ts payable.....	16,755
Profit and loss.....	113,386
	\$1,040,888

It should be stated that the above does not include the extra stock issue made at consolidation. To the cost of road and equipment there should also be added about \$160,000 of net earnings applied to construction, previous to re-laying the road.

The following statement shows the cost, gross earnings, expenses, net profits and dividends paid from 1835 to the present time.

Year.	Cost.	Gross Earnings.	Expenses.	Net Profit.	Dividends.
1835.....	\$614,745	\$104,260	\$53,668	\$50,592	10
1836.....	646,030	108,842	46,331	62,511	10
1837.....	630,000	103,938	80,736	23,202	None.
1838.....	690,840	121,440	92,744	28,696	7 1/2
1839.....	759,858	148,885	101,524	37,861	6 1/2
1840.....	736,861	164,905	116,459	50,447	8
1841.....	807,515	174,185	96,398	77,787	7
1842.....	881,544	183,343	86,889	48,454	None.
1843.....	948,574	117,739	62,208	55,531	None.
1844.....	948,574	122,670	58,718	64,152	3
1845.....	948,574	147,630	78,630	68,990	5
1846.....	948,574	163,092	87,131	75,961	6
1847.....	948,574	182,686	76,297	106,389	7
1848.....	948,574	158,192	77,080	81,112	7
1849.....	948,574	180,454	121,257	59,197	7 1/2
1850.....	923,821	211,129	114,949	96,179	7 1/2
1851.....	991,833	192,033	87,995	104,038	7
1852.....	991,833	227,033	109,309	117,724	7
1853.....	968,586	223,888	134,015	89,872	7
1854.....	944,608	206,327	120,688	85,638	7
1855.....	1,009,115	263,874	140,213	123,661	4

Baltimore and Ohio Railroad.

The following gentlemen were on Thursday elected directors on the part of the State in the Baltimore and Ohio Railroad: John S. Gittings, B. R. Vickers, James J. Lawn, Joshua Vansant, Baltimore; James L. Schley, Cumberland; Edward Mealy, Hagerstown; Edward Shriver, Frederick; Isra Houck, do; Edward Hammond, Ellicott's Mills. Wm. Gaither, Montgomery county.

Railroad Management.

MR. EDITOR,—I have observed from time to time certain communications in the Commercial Advertiser in relation to railroad management and operations under the signature of "Veritas." These communications show especially a familiarity with the financial affairs of railroad companies, the method of keeping accounts, transacting business, &c., and evincing as they do candor and good sense, have been to me of no little interest.

It cannot, I think, be doubted, that there is among the managers of our railroads a considerable degree of that carelessness, or indifference to strict accuracy which "Veritas" has complained of, nor that there is a wide distrust of the statements of their Reports in consequence. Yet I am unwilling to attribute this, except in rare cases, to any intention to mislead the public. The high standing and character of the great majority of those who fill the Executive Board of railroad companies forbids this idea. It is, however, no aspersion to say that not all of them have or can be expected to have that practical acquaintance with operations of this sort, which alone can give them comprehensiveness of views and accuracy of detail in relation to all the matters embraced in said Reports. For the same reason they do not always fully appreciate the great necessity of such accuracy, nor of employing only such officers and clerks as from their thorough training or long experience are competent to systematize all their accounts and deduce the desired results from them with order and precision.

The management of railroad operations is a science which in this country is still imperfectly understood. Hitherto the directors and principal officers have been chosen by the companies chiefly with reference to their ability to raise funds, and not for their practical skill in the economical workings of the roads. They have generally been engaged at the same time in other pursuits of their own, which necessarily occupy much of their attention, and which they cannot be expected to neglect for any public duties. Nor do great ability and success in other branches of business, always capacitate them for this. A good physician may be a very poor blacksmith. A successful merchant may not know what form or weight of iron rail will wear most economically, or whether it be cheaper in the end to burn coal or wood in a locomotive engine. Very few railroad directors can tell precisely the cost of the business,—what for instance it costs to transport one passenger one mile, and what, therefore, they can afford to do it for. The number of items which enter into an exact solution of that problem is very great, and can be determined only by induction from extensive data gathered from the experience of many years, and under a great variety of contingent circumstances. How can it be expected that all these will be known to those who have had no experience of these matters themselves, and who can give to their consideration only such spare time as they may be able to abstract from their own private business?

Some of the elements upon which the most important particulars of railroad management are founded are simple assumptions. One of them is a prevalent idea that the expenses of railroads are about fifty per cent. of their earnings, which may or may not be true; but in either case, it is only

a mere guess. Another is the current standard of rates for freight and passenger fares, which is built on no carefully ascertained facts as to their cost, but is generally adopted by each company, because it is about the same as that which is in use by other companies.

It is believed that as a result of this lack of definite information on important points, and under the competition of rival roads, each being anxious by the cheapness of its fares to draw the largest amount of business possible, the rates in general use on all the roads are much too low. In no other way can it be fully accounted for why railroad stocks are so generally below par in the market. If their net receipts were justly proportioned to their earnings, why should they not be enabled to declare dividends and command fair prices in the stock market as well as Banks, Insurance companies, and other monied institutions?

To these causes also are to be attributed in great part the crudeness and inaccuracy so often shown in railroad reports. They are not, we believe, so much owing to an intention to misrepresent as to the crude and undigested state of the accounts and data from which they are prepared, and the incompetency of the managers generally to reduce them into any better state. Nor do we see any adequate remedy for these evils, but for the companies to select and encourage by suitable compensation those officers who by their talents and experiences as well as integrity shall be able to introduce system and order into this most important department of business, and secure in consequence the confidence and respect of the public.

A RAILROAD OFFICER.

Memphis and Charleston Railroad.

The Governor of Alabama, we understand from the President of this road, has positively refused to permit the Treasurer to pay over the \$300,000, on the bill passed by the Legislature of that State, notwithstanding it was passed over his veto. We are glad, however, to learn that the company has made a negotiation of \$250,000 of their company's bonds, at Charleston, at a price entirely satisfactory, which enables them to progress with their work rapidly to completion. The Eastern Division of this road from Tusculumbia to Stevenson, one hundred and twenty-nine miles, was finished on the day before yesterday, the 10th ult., and the train will be run on that division regularly on and after the 20th ult.

There are now in operation on the Western Division eighty-eight miles of road, the receipts of which the past year have been over \$250,000.—The remaining link of this road from Pochontas to Tusculumbia, seventy miles, is now every foot under contract; forty-five miles of it is graded and ready for the iron, and about eight hundred hands actively engaged in completing the unfinished grading. The iron is all purchased, and fifteen hundred tons of it now in New Orleans, and the balance will arrive as fast as required for the track-laying. The company will commence laying track at Tusculumbia and Pochontas by the 1st of May, and will progress east and west until the gap is closed, which it will be, without accident, by the 1st of January next; thereby giving to Memphis direct railroad connections with the whole of the Atlantic seaboard, within twelve months, and opening up to our city the rich trade of East and Middle Tennessee. North Alabama, too, will pour into her lap, by railroads, more trade than she now has. This connection will give to the people of the Mississippi Valley, and the entire South-west, the means of easy, cheap and expeditious communication with all the great commercial points on the Atlantic seaboard.

For these auspicious results, so near at hand, we

are largely indebted to the steam-engine energy, and active business sagacity of the President of the road, Sam. Tate, who, within the last six months, has seemed to be endowed with ubiquity, as well as the business sagacity and activity necessary to meet every exigency.—*Memphis Bulletin.*

Taxable Property in San Francisco.

F. D. Kohler, Esq., of San Francisco, furnishes the following abstract of property of all kinds, its valuation, State and County tax and aggregate thereof, rate and amount of tax, and number of polls assessed, for the county of San Francisco, for the year 1855:—

Number of acres of real estate other than city or town lots.... acres	215,500
Value of same.....	\$758,880 00
" city and town lots.....	18,625,475 00
" improvements thereon....	8,392,425 00
" personal property.....	5,065,347 76
Total value of property.....	\$32,841,027 76
State tax thereon, at 60c.....	197,046 16
County tax thereon at 92½c.....	303,779 49
Poll tax for State purposes.....	4,500 00
Poll tax for County purposes.....	3,000 00
State portion of delinquent tax of previous year.....	63,186 24
County portion of do.....	115,841 44

—*Hunt's Merchant's Magazine.*] \$687,353 33

ABSTRACT FROM THE RETURNS OF THE RAILROAD COMPANIES IN MAINE FOR 1855.									
NAMES OF ROADS.	Length in Miles.	Authorized Capital.	Capital paid in.	Cost of road and equipment.	Debts.	Gross Earnings.	Dividends.		
Androscoggin.....	20	\$1,250,000	\$91,823	\$368,682	.....	.....	None.	.....	.....
" and Kennebec.....	55	1,400,000	2,218,817	2,218,817	\$1,141,422	\$106,348	None.	.....	.....
Atlantic and Lawrence.....	149	4,000,000	2,491,900	6,282,173	3,494,000	552,488	\$116,729	.....	.....
Bangor, Oldtown, and Milford.....	12½	600,000	138,000	178,234	44,923	46,170	.....	.....	.....
Boston and Maine.....	46½	4,156,700	4,076,974	4,179,646	320,141	854,426	1,246	.....	.....
Calais and Bangor.....	6	200,000	100,000	224,666	138,020	37,173	.....	.....	.....
Kennebec and Portland.....	72½	1,107,526	1,107,526	2,766,678	1,556,911	228,064	.....	.....	.....
Machiasport.....	7½	100,000	76,000	100,000	None.	8,000	3 per cent.	.....	.....
Oldtown and Lincoln.....	Not opened.	500,000	80,768	30,738	.....	.....	.....	.....	.....
Penobscot and Kennebec.....	64¾	1,000,000	518,575	1,358,888	1,161,076	38,042	.....	.....	.....
Portland, Saco, and Portsmouth.....	51	1,500,000	1,396,400	1,71,662	140,625	277,502	3 per cent.	.....	.....
Penobscot.....	51	600,000	171,662	229,539	561,077	24,577	.....	.....	.....
Somerset and Kennebec.....	24	700,000	253,740	561,077	88,532	.....	.....	.....	.....
York and Cumberland.....	18	1,500,000	294,194	774,715	415,634	39,268	.....	.....	.....
Great Falls and S. Berwick.....	48	100,000	98,060	.....	25,000	.....	.....	.....	.....

* Three miles in New Hampshire. These figures stand for the whole. † Included in those of Kennebec & Portland R. R.

Railway Share List,

Compiled from the latest returns—corrected every Wednesday—on a par valuation of \$100.

NAME OF COMPANY.	Length of Road.	Capital paid in.	Debt.	Total cost of road & equip't.	Gross Earnings for last official year.	Net Earnings for do.	Dividend for do.	Price of Shares.	NAME OF COMPANY.	Length of Road.	Capital paid in.	Debt.	Total cost of road & equip't.	Gross Earnings for last official year.	Net Earnings for do.	Dividend for do.	Price of Shares.
Atlantic & St. Lawrence	149	1,538,100	2,973,700	6,019,929	470,647	90,797	6	68	Brunswick and Florida, Ga.	30	300,000	300,000	550,000	In progr.			
Androsog. & Kennebec	56	642,343	1,473,080	2,245,020	190,605	12,807	none	18	South Western	92	1,097,495	465,500	1,624,920	253,306	141,168	8	
Androsoggin	20	91,192	232,193	343,317	29,396	12,807	none	20	Tennessee and Alabama	30	246,486		679,906	In progr.			
Kennebec & Portland	56	1,114,725	1,661,236	2,470,600		124,088	6	87	Tennessee and Mississ.	131	170,931		175,740	In progr.			
Portl. Saco & Portland	51	1,367,000	1,199,237	1,486,327	259,330	124,088	6	87	Memphis and Charleston	288	2,103,177	958,275	3,563,362	176,484	102,016		
Boston, Concord & Montreal	93	1,808,993	1,059,512	2,771,310	233,234	124,088	6	87	Mobile and Ohio	163	2,668,555	1,802,921	4,536,412	199,932	109,236		
Cheshire	53	2,085,925	899,313	3,179,687	380,221	143,665	2		Miss. Central	188	642,534		628,303	In progr.			
Concord	35	1,485,000	none	1,412,676	329,744	158,632	8	85	N.O., Opelousas & G.W.	55	2,930,425	671,645	2,657,565	In progr.			
Northern, N. H.	82	2,768,400	none	3,016,633	370,529	138,299	2 1/2	41	Vicksburg, Shreveport & Tex.	111	1,117,750	none	1,077,895	In progr.			
Conn't & Passumps. Riv.	61	1,048,145	787,608	1,780,062	162,687	55,173	none		East Tennessee and Ga.	111	1,000,000	1,500,000	2,500,000	In progr.			
Rutland & Burlington	120	2,233,376	2,662,396	5,378,428	394,971	214,793	none		East Tennessee and Va.	16	625,425	938,593	1,033,781	In progr.			
Vermont Central	117	5,000,000	3,550,236	8,463,366	820,119	214,793	none		Nash. and Chattanooga	161	2,319,330	1,497,081	3,843,694	316,090	112,177	none	
Boston and Lowell	27	1,830,000	325,635	2,188,595	489,754	140,377	6	68 1/2	Covington & Lexington	93			264,973			18	
Boston and Maine	83	4,076,974	150,000	4,179,535	454,226	339,060	6	83	Lexington and Frankfort	29	431,091	159,299	635,363	90,930	34,864		
Boston and N.Y. Central	74	2,240,300	1,518,671	3,463,181	69,917	8,740	none		Lexington & Big Sandy				428,057	In progr.			
Boston and Providence	56	3,160,000	359,132	3,677,154	558,671	219,689	none	64 1/2	Lexington and Danville		640,117	61,525	570,463	In progr.			
Boston and Worcester	68	4,500,000	655,428	4,865,428	1,008,004	404,461	6	88 1/2	Louisville and Frankfort	65	693,236	669,061	1,589,566	244,014	96,902	6	
Cape Cod	47	881,690	280,498	997,252	119,221	65,527	3	29 1/2	Atlantic & Gt. Western	254	866,939	77,294	613,231	In progr.			
Connecticut River	52	1,591,110	273,241	1,802,244	286,563	108,787	5 1/2	45 1/2	Bellevue and Ind.	118	1,881,635	2,025,292	2,852,652	298,293	140,823	none	40
Eastern, Mass.	60	2,583,400	2,947,737	4,621,016	647,281	305,998	4	45 1/2	Clev., Col., and Cin.	141	4,473,721	374,127	4,546,133	1,626,011	657,905	9	100 1/2
Fitchburg	67	8,540,000	153,700	3,765,998	651,163	225,071	7	86	Clev., Zanesv. and Cin.	87							
Nashua and Lowell	14	600,000	16,000	654,603	181,887	65,877	6	86	Cleveland and Toledo	200	2,675,425	2,689,301	5,124,629	736,272	396,980	10	80 1/2
N. Bedford and Taunton	21	500,000	none	533,958	126,491	56,533	6	83 1/2	Clev. and Mahoning	103			628,533	In progr.			
Old Col'y and Fall River	87	3,015,100	292,650	3,362,949	653,499	295,738	6	83 1/2	Clev. and Pittsburg	133	2,686,770	2,516,162	4,818,163	450,215	255,868		65
Vermont and Mass.	77	2,232,541	1,033,670	3,209,727	288,726	87,313	none	9 1/2	Cin., Hamilt'n & Dayton	60	2,100,000	1,464,364	2,961,978	483,620			65
Western, Mass.	155	8,160,000	5,966,420	10,495,905	1,869,673	75,760	2	42	Cin., Wilm. & Zanesv.	131	1,126,450	1,181,265	2,326,459	In progr.			18
Worcester and Nashua	48	1,141,000	205,565	1,351,271	311,430	138,057	7	72 1/2	Columbus and Xenia	55	1,484,550	149,000	1,481,733	356,366	187,518	10	85 1/2
Providence and Worcester	43	1,510,020	335,451	1,806,696	311,430	138,057	7	72 1/2	Dayton, Xen. & Belpre	63	437,833	422,658	800,496	In progr.			
Hartford and N. Haven	72	2,359,000	939,000	3,313,832	730,012	352,799	10	118	Dayton and Michigan	140	1,076,692	393,011	1,185,826	In progr.			
Hart'd, Prov. and Fishkill	125	1,845,610	2,090,124	4,060,869	288,685	119,611	10		Dayton and Western	35	310,000	500,000	733,769				18
Housatonic	110	2,000,000	474,177	2,429,066	238,266	18,351	none		Eaton and Hamilton	42	448,411	835,994	1,345,573	113,859	53,256	25	
Naugatuck	57	1,081,800	573,995	1,577,167	238,266	18,351	none	30	Little Miami	65	2,963,921	1,171,785	3,648,172	681,562	336,708		92
N. York and N. Haven	62	2,992,450	2,264,656	4,906,784	103,986	41,661	217	none	Mad River and L. Erie	205	2,451,550	2,572,932	4,446,661				16 1/2
N. Haven and N. London	50	788,253	735,165	1,450,518	103,986	41,661	217	none	Central Ohio	138	1,520,927	3,485,076	4,283,443	Recently opened.	none	12 1/2	
N. London, W. & Palmer	66	609,200	1,073,673	1,694,383	124,044	66,331	2	84	Ohio and Penn.	187	2,451,700	3,219,000	5,670,700	1,111,626	662,117	9	
Norwich and Worcester	66	2,122,300	873,489	2,997,153	304,230	88,458	2	84	Pittsbg, Mansf. & Newk	127	1,350,000	2,206,387	3,552,357	328,958	164,479	none	
Albany Northern	32	439,005	1,625,095	1,840,696	97,423	68,333	none		Scioto & Hocking Valley	135	403,975	609,050	888,868	In progr.			
Black River and Utica	35	643,330	317,559	974,223	172,476	68,333	none		Springf. Mt. Vernon & P.	113	1,000,000	950,000		In progr.			
Buffalo, Conn. and N. Y.	100	1,487,871	1,601,183	2,819,096	288,392	31,896	none		Tol., Wabash & St. Louis	242	2,500,000	4,530,000		In progr.			
Buffalo and N. Y. City	92	798,439	2,557,849	3,401,868	288,392	31,896	none		Cin., Log. & Chicago	255	4,196,679	1,006,125	2,080,433	In progr.			7 1/2
Buffalo and St. Line	69	1,300,000	1,040,000	2,484,364	679,750	355,763	10		Evansv. & Crawfordsv.	109	706,945	1,177,596	1,844,541	127,400	64,652		
Canandaigua and Elmira	47	434,111	922,393	1,275,736	174,089	69,506	none		Ind. and Cincinnati	88	1,213,723	1,442,859	2,178,461	366,012	193,142	7	58
Canandaigua & Niagara F.	98	1,315,000	2,279,854	3,495,832	48,649	48,649	none	35 1/2	Indiana Central	66	611,400	1,261,179	1,907,911	350,176	134,375		48
Cayuga & Susquehanna	35	857,000	506,689	1,187,562	135,433	608,946	none		Ind., Clev. & Pittsburg	83	834,157	1,101,971	1,671,544			none	20
Hudson River	144	8,768,408	9,250,362	12,737,898	301,793	116,462	none	31	Jeffersonville	66	1,014,252	694,000	206,544		94,318	none	
Long Island	85	1,875,148	608,949	2,655,986	3,162,128	8	91 1/2	Madison and Indianapolis	87	1,647,500	1,589,881	3,237,381			none		
New York Central	554	24,154,860	14,462,742	25,523,913	4,488,993	2,627,118	none	57	New Albany and Salem	288	2,535,121	5,281,948	6,643,189	645,827	371,402	none	10
New York and Erie	404	10,024,958	25,126,669	35,439,431	5,488,993	2,627,118	none	19 1/2	Peru and Indianapolis	73		858,314	150,000		90,000	none	17
New York and Harlem	135	5,717,100	4,069,769	6,470,714	120,153	138,754	none	2	Terre Haute and Ind.	73	974,800	604,355	1,502,166	287,512	189,702	10	95
Northern, N. Y.	118	1,633,022	4,406,874	6,470,714	120,153	138,754	none	3 1/2	Chicago and Rock Is'd	182	3,141,500	2,387,155	5,214,152	In progr.			90 1/2
Oswego and Syracuse	35	399,000	216,681	728,683	In progr.		none		Chicago and St. Louis	220			1,077,312				
Potsdam and Watertown	29	467,200	284,189	749,683	In progr.		none		Chic. St. Paul & F'd du Lac	178	2,300,000	1,325,000	3,625,000	In progr.			
Rensselaer & Saratoga	25	610,000	140,000	896,423	241,149	82,600	7		Galena and Chicago	298	4,334,800	1,189,304	5,866,263	1,506,710	942,231	17	114 1/2
Saratoga and Whitehall	45	500,000	395,600	719,909	21,089	none	none		Illinois Central	707	1,419,440	18,001,426	17,698,099	1,532,118			88
Syracuse & Binghamton	80	768,369	1,678,804	2,272,777	159,484	25,503	none		Peoria and Ogawka	93	569,889	518,454	1,388,342				
Troy and Boston	27	1,376,830	737,079	1,109,322	156,383	55,184	3 1/2		Ohio & Miss. (Wst. Div.)	147	1,780,295	3,292,403	4,870,586	Recently opened.			
Watertown and Rome	97	1,376,830	737,079	1,109,322	156,383	55,184	3 1/2		Terre Haute and Alton	173	2,281,420	1,256,000	3,537,424	In progr.			
Belvidere Delaware	64	1,000,000	1,619,000	2,619,000	161,355	75,534	none		Detroit and Milwaukee	185	838,000	1,128,964	1,966,969	In progr.			
Camden and Amboy	94	3,000,000	11,407,200	6,856,523	2,017,127	961,941	12		Mich. Central	282	6,021,916	6,142,023	10,300,147	2,215,283	879,656		94 1/2
Camden and Atlantic	50	369,320	1,522,131	1,729,442	122,417	50,080	none	12 1/2	Mich. South'n & N. Ind.	475	6,928,900	6,319,224	11,645,208	2,410,000	875,000	10	96
New Jersey Central	63	2,000,000	2,266,176	6,883,149	393,728	171,603	10		Green Bay, Mil. & Ch.	155	764,077	442,726	1,193,768	In progr.			
Morris and Essex	55	1,167,805	375,000	1,636,550	225,805	102,474	6		Milwaukee and Miss.	106	1,826,428	647,889	3,578,757	691,843	417,443	17	86
Allegheny Valley	44	1,376,830	737,079	1,109,322	156,383	55,184	3 1/2		Milwaukee & Water'n	72	354,861	182,000	514,238	In progr.			
Cataw. W. & Eri	56	1,099,500	12,211	1,191,833	148,911	259,263	10		Milwaukee and Horicon	15	554,200		354,109	In progr.			
Cumberland Valley	109	3,061,622	3,884,702	6,022,667	628,911	259,263	10		Milwaukee & La Crosse	51	1,351,832	532,131	1,883,963	In progr.			
Del. Lark & Western	33	600,000	150,000	750,000			10		Racine and Miss.	47	921,906	380,715	1,289,321	In progr.			
Erie and North East	33	600,000	150,000	750,000			10		Hannibal & St. Josephs		292,351	580,000	823,310	In progr.		</	

Railroad Bonds.

NAMES OF COMPANIES. (The following quotations are ex-interest.)	Amount of Loan.	Description of Bonds.	Rate Int.	Interest payable.	Where payable.	Due.	Offered.	Asked.
Alabama and Tennessee River	\$838,000	1st mortgage, convertible	7	1st Jan. 1st July	N.Y.	1872	85	
Buffalo and State Line	600,000	Do. convertible	7	1st April, October	"	1866	98	
Bellefontaine and Indiana	600,000	Do. convertible	7	1st Jan'y, July	"	1866	92 1/2	
Do. do.	200,000	Real estate, convertible	7	1st Jan'y, July	"	1868	92 1/2	
Do. do.	200,000	Income, guar. Cl. Col. & Cin.	7	1st Feb'y, August.	"	1869		
Central Ohio	1,250,000	1st mort. conv. east. sec.	7	Divers	"	1861-64	77	
Do. do.	800,000	2d do. convertible	7	1st March, Sept.	"	1865	75	
Cincinnati, Hamilton, and Dayton	500,000	1st mortgage convertible	7	20 Jan. 20 July	"	1867	91	
Do. do.	465,000	2d do. do.	7	1st May, Novemb.	"	1880	80	
Cincinnati and Marietta	2,500,000	1st mortgage, conv. till 1862	7	1st Jan'y, July	"	1868	62 1/2	
Cincinnati, Wilmington, and Zanesville	1,300,000	Do. convertible	7	1st May, Novemb.	"	1862	87 1/2	
Cleveland, Painesville, and Ashtabula	567,000	Do. convertible	7	1st Feb'y, August.	"	1861	92 1/2	
Cleveland and Pittsburgh	800,000	Do. convertible	7	1st Feb'y, August.	"	1860	93	
Do. do.	1,200,000	Do. on Branches	7	1st March, Sept.	"	1873	75	
Cleveland and Toledo	525,000	Do. convertible	7	1st Feb'y, August.	"	1863	86 1/2	
Chicago and Mississippi	800,000	Do. conv. till 1857	7	1st April, October	"	1862-72	60	
Do. do.	1,200,000	Do. convertible	7	1st April, October	"	1862-72	85	
Covington and Lexington	400,000	Do. do.	6	1st April, October	"	1862	73	
Do. do.	1,000,000	2d mortgage, convertible	7	1st March, Sept.	"	1863	64	
Delaware, Lackawanna, and Western	1,500,000	1st mortgage, do.	7	1st April, October	"	1875	90	
Fort Wayne and Chicago	1,250,000	Do. conv. till 1863	7	1st Jan'y, July	"	1873	80	
Galeta and Chicago	2,000,000	Do. convertible	7	1st Feb'y, August.	"	1863	96	
Do. do.	2,000,000	2d mortgage, do.	7	1st May, Novemb.	"	1875	89	
Great Western (Illinois)	1,000,000	1st mortgage, do.	10	1st April, October	"	1868	86	
Green Bay, Milwaukee, and Chicago	400,000	Do. convertible	8	1st April, 10 Oct.	"	1863	93	
Jeffersonville	300,000	Do. 2d sec. conv.	7	1st April, October	"	1873	75	
Indiana Central	600,000	Do. convertible	7	1st May, Novemb.	"	1866	90	
Indianapolis and Bellefontaine	450,000	Do. do.	7	1st Jan'y, July	"	1860-61	80	
Indianapolis & Cin'ti (for Lawb. & U. M.)	500,000	Do. conv. till 1857	7	1st March, Sept.	"	1866	90	
La Crosse and Milwaukee	950,000	1st mort. 1st sec. conv. till 1864	8	1st May, Novemb.	"	1874	85	
Lake Erie, Wabash, and St. Louis	3,400,000	1st mortgage, conv. till 1859	7	1st Feb'y, August.	"	1865	76 1/2	
Little Miami	1,500,000	Do. convert.	6	1st May, 2 Nov.	"	1863	79 1/2	
Michigan Central	1,000,000	No mortgage, convertible	8	1st April, October	Bost.	1860	99 1/2	
Do. do.	600,000	Do. do.	8	1st March, Sept.	"	1869	100 1/2	
Milwaukee and Mississippi	600,000	1st mort. 1st sec. conv. till 1857	8	1st Jan'y, July	N.Y.	1862	96 1/2	
Do. do.	650,000	Do. 2d do.	8	1st April, October	"	1863	96	
Do. do.	1,250,000	Do. 3d do.	8	1st June, Decemb.	"	1877	90	
New Albany and Salem	500,000	Do. 1st section	10	1st April, October	"	1868-62	90	
Do. do.	2,325,000	Do. oth. sec. con. till 1858	8	1st May, Novemb.	"	1864-75	90	
Northern Cross	1,200,000	1st mortgage, convertible	8	1st Jan'y, July	"	1873	94	
Ohio and Indiana	1,000,000	Do. do.	7	1st Feb'y, August.	"	1867	90	
Ohio and Pennsylvania	1,750,000	Do. do.	7	1st Jan'y, July	"	1866-66	94	
Do. do.	2,000,000	Income, convertible	7	1st April, October	"	1872	79	
Pennsylvania (Central)	5,000,000	1st mortgage, conv. till 1860	8	1st Jan'y, July	Phila.	1860	95	
Racine and Mississippi	680,000	Do. conv. sink'g 'd	8	1st Feb'y, August.	N.Y.	1876	84 1/2	
Seloto and Hocking Valley	300,000	Do. 1st sec. conv.	7	1st May, Novemb.	"	1861		
Steubenville and Indiana	1,500,000	Do. convertible	7	1st Jan'y, July	"	1865	78	
Terre Haute and Indianapolis	600,000	Do. do.	7	1st March, Sept.	"	1866	98	
Terre Haute and Alton	1,000,000	Do. do.	7	1st Feb'y, August.	"	1862-72	77	
Do. do.	2,000,000	2d do. do.	8	1st Feb'y, August.	"	1870	77	

NAMES OF COMPANIES. (The following quotations include the accrued interest.)	Amount of Loan.	Description of Bonds.	Rate Int.	Interest payable.	Where payable.	Due.	Offered.	Asked.
Baltimore and Ohio	2,500,000	Mortgage	6	1st April, October	Balt.	1885	84 1/2	85
Do. do.	1,125,500	Do. do.	6	1st Jan'y, July	Balt.	1875	87 1/2	88
Chicago and Rock Island	2,000,000	1st mortgage, conv. till 1859	7	1st Jan. 10 July	N.Y.	1870	94	94 1/2
Erie Railroad	3,000,000	1st mortgage	7	1st May, Novemb.	"	1867	108 1/2	110
Do. do.	4,000,000	2d mortgage, convertible	7	1st March, Sept.	"	1859	95	95 1/2
Do. do.	6,000,000	3d mortgage	7	1st March, Sept.	"	1883	92	92 1/2
Do. do.	4,000,000	Not conv. Sink Fund, \$420,000	7	1st Feb'y, August.	"	1875	91	91 1/2
Do. do.	4,351,000	Convertible, Inscription	7	1st Feb'y, August.	"	1871	83 1/2	84
Do. do.	3,500,000	Convertible	7	1st Jan'y, July	"	1862	85 1/2	86 1/2
Hudson River	4,000,000	1st mortgage, Inscription	7	1st Feb'y, August.	"	1869-70	98 1/2	99 1/2
Do. do.	2,000,000	2d do. do.	7	1st Feb'y, August.	"	1860	88	89
Do. do.	3,000,000	3d do. convertible	7	1st May, Novemb.	"	1870	71 1/2	72
Illinois Central	17,000,000	Mortgage, convertible	7	1st April, October	"	1875	87 1/2	87 1/2
Do. (Free Land)	3,000,000	Mfge 345,000 acrs-priv. 7 shar's	7	1st March, Sept.	"	1860	93 1/2	94
Michigan Southern	1,000,000	1st mortgage, convertible	7	1st May, Novemb.	"	1860	92	95
New York and Harlem	1,800,000	Do. do.	7	1st May, Novemb.	"	1861-72	86 1/2	86
New York and New Haven	750,000	No mortgage, do.	7	1st June, Decemb.	"	1855-60		
New Haven and Hartford	1,000,000	1st mortgage, do.	6	1st Jan'y, July	"	1873		97 1/2
Northern Indiana	1,000,000	Do. do.	7	1st Feb'y, August.	"	1861	91	92
Do. Goshen Branch	1,500,000	Do. do.	7	1st Feb'y, August.	"	1868	85 1/2	86
New York Central	8,287,000	No mortgage, do.	6	1st May, Novemb.	"	1883	90	90 1/2
Do. do.	3,000,000	No m'ge conv. from June 57-59	7	1st June, 15 Dec.	"	1864	102 1/2	102 1/2
Panama, 1st issue	900,000	Convertible till 1856	7	1st Jan'y, July	"	1866	105	106
Do. 2d do.	1,475,000	Do. till 1858	7	1st Jan'y, July	"	1866	105	106
Reading, issued 1843	1,573,000	Mortgage, convertible	6	1st Jan'y, July	Phila.	1860		
Do. do. 1844, '48, '49	1,300,000	Do. convertible	6	1st Jan'y, July	"	1860	93	94
Do. do. 1849	3,469,000	Do. convertible	6	1st April, October	"	1870	85	85 1/2

CITY SECURITIES.	Int't payable.	Off'd p. ct.	Ask'd p. ct.	CITY SECURITIES.	Int't payable.	Off'd p. ct.	Ask'd p. ct.
New York, 7 per ct. 1857	Feb'y,	100		Milwaukee, 7 per ct. coup.	X	Divers	89
Do. 5 do. 1858-'60	May,	95	97 1/2	New Orleans, 6 per ct. cp. R.R. X	Do.	Do.	75
Do. 5 do. 1870-'75	August,	95	97 1/2	N. Orleans, 6 per ct. cp. municip.	Jan'y, July	Do.	83
Do. 5 do. 1880	November,	96		Philadelphia, 6 per ct. 1876-'98	Jan'y, July	Do.	91 1/2
Albany, 6 per ct. coup. 1871-'81 X	Feb'y, August,	98		Pittsburgh, 6 per ct. coup.	X	Divers	76
Alleghany, 6 per ct. coup. 1871-'81 X	Jan'y, July	66		Quincy, 8 per ct. coup. 1868 X	Jan'y, July	Do.	92 1/2
Baltimore, 6 per ct. 1879-'90	Quarterly	96 1/2	97	Racine, 7 per ct. coup. 1873 X	10 Feb'y, Aug.	Do.	84
Boston, 5 per ct. coup. 1871-'81 X	April October	99	100	Rochester, 6 per cent. coup. X	X	Divers	95
Brooklyn, 6 per ct. coup. Long X	Jan'y, July	100	101	St. Louis, 6 per ct. coup. Long X	Do.	Do.	79
Clev'Pd, 7 per ct. cp. W.W. 1879 X	Do. do.	100 1/2	101 1/2	St. Louis, 6 per ct. municip. X	Do.	Do.	79 1/2
Cincinnati, 6 per ct. coup. 1871-'81 X	Divers	89	90	Sacramento, 10 p. ct. cp. 1862-'74 X	Do.	Do.	80 1/2
Chicago, 6 per ct. coup. 1873-'77 X	Jan'y, July	90	90 1/2	S. Francisco, 7 p. a. cp. 1865 pay. N.Y. X	May, Novemb.	Do.	78
Detroit, 7 per ct. cp. W.W. 1873-'78 X	Feb'y, August,	100	102	Do. 10 p. ct. 1871 X	Do.	Do.	97
Dubuque, 6 per ct. cp. Long X	March, Sept.	101	105 1/2	Do. 10 do. pay. N.Y. X	Jan'y, July	Do.	104
Jersey City, 6 p. ct. cp. W.W. 1877 X	Jan'y, July	98		Do. 6 per ct. pay. N.Y. 1876 X	Do. do.	Do.	60
Louisville, 6 per ct. cp. 1880-'83 X	Divers	70	80	Wheeling, 6 per ct. coup. X	X	Divers	67 1/2
Memphis, 6 per ct. coup. 1882 X	Jan'y, July	65	70	Zanesville, 7 do. X	April, October	Do.	97 1/2

Cincinnati Stock Sales.

By KIRK & CHEEVER.
For the week ending April 1st, 1886.

BONDS.	Per ct.
Little Miami, 6 per ct. Mort.	80
Covington & Lexington, 2d Mort. 7 per ct.	65
Ohio & Mississippi, 2d Mort. 7 per ct.	45
Marietta & Cincinnati, 7 per cent. 1st Mort.	71
Indianapolis & Cin., 2d Mort. 7 per ct.	80
Hillsboro' & Cin., 7 per ct. 1st Mort.	50
Cin., Ham. and Dayton, 2d Mort. 7 per ct.	87
Cin. Wil. & Zanes. 2d Mort. 7 per ct.	58
Covington & Lexington, 10 per ct. Income	60

STOCKS.	Per ct.
Cin., Wilm. and Zanesv., 17.—Cin., Ham. and Dayton, 68.—	
Col. & Xenia, 86.—Cincinnati & Chic., 7 1/2.—Central Ohio, 12 1/2.	
Covington and Lexington, 18.—Dayton and Western, 17 1/2.	
Eaton and Hamilton, 25.—Fort Wayne and Southern, none.	
Indiana Central, 49.—Indianapolis and Cincinnati, 53.—Little	
Miami, 91 1/2.—Mad River & Lake Erie, 16 1/2.—Marietta & Cin.,	
18.—Ohio and Mississippi, 7 1/2.—Hillsboro' and Cincinnati, 13.	
—Peru and Indianapolis, 18.	

By HEWSON & HOLMES.
For the week ending April 2nd, 1886.

BONDS.	Per ct.
\$3,000 Cinc., Ham. and Dayt, 7 per ct. 2d Mortg.	85 (int.)
5,000 Little Miami, 6 per ct. 1st Mortg.	80
2,000 Covington & Lex., 7 per ct. 2nd Mortgage	65
8000 " "	65 1/2
1,200 Columbus & Xenia, Divid.	85
500 Ind. & Cin. 7 per cent. Dividend	70
610 Clevel. and Pittsb., Dividend Scrip	63
3,000 Marietta & Cin., 7 per ct. Domestic	45
5,000 Ohio & Miss. 7 per ct. 1st Mort.	69 1/2
350 Little Miami, Dividend Scrip	80

STOCKS.	Per ct.
250 Shares Ohio & Mississippi	7 1/2
" "	39
" "	78
" "	63
" Little Miami	91 1/2
" Clevel. Col. & Cin.	101 1/2
" Bellefontaine & Indiana	40
" Eaton & Hamilton	23
" "	23
" Covington and Lexington (4 months)	1 1/2
" Cincinnati and Chicago	7 1/2
" "	22
" Indianapolis and Cincinnati	58
" Columbus & Xenia	85 1/2
" Cincinnati, Hamilton, & Dayton	67

Marie & Kanz' Money Circular for the

European Steamer of the 9th inst.

[TRANSLATED EXTRACT.]

NEW YORK, Monday, April 8th, 1886.

The absence of speculation which we have noticed for several weeks past still continues; and neither the abundance of capital, nor the general conviction since the Asia's arrival that peace is now a certainty, has been able to communicate a serious movement to public stocks. Quotations have been well sustained during the week, and show on the whole a slight improvement on our previous advices. The coupons due on 1st inst., on the \$400,000 Columbus, Piqua and Indiana Railroad 8d Mortgage Bonds, indorsed and guaranteed by the three following companies: Cleveland Columbus and Cincinnati Railroad, Bellefontaine and Indiana Railroad, and Indianapolis and Bellefontaine Railroad, have not been paid. This default is in consequence of an injunction served at the request of a few stockholders upon the three last companies, restraining them from paying the said interest until the courts shall have decided as to the validity of the said endorsements. The indorsements were given in consideration of a change of the gauge of the first mentioned road, and, in the case of the Cleveland, Columbus and Cincinnati, was ratified by the Directors, and by a meeting of the stockholders. But the plea urged for resisting payment is, that the charter (which is a special charter, given prior to the enactment of the General Railroad Law of Ohio) does not authorize the Company to indorse or guarantee the bonds of other companies, without being previously authorized to do so by a special act of the Legislature, which authority has in this case never been obtained. This default has called forth general reprobation, and the feeling is almost unanimous with the stockholders, the press and the public, immediately to take the necessary steps to legalize the bonds in dispute. What those steps may be it is at present too soon to determine. The coupons of the Chicago and Mississippi first mortgage Bonds have likewise been allowed to pass unpaid. Those of the Madison and Indianapolis second mortgage Bonds, which have remained unpaid for a long time, as well as those of the first mortgage, were paid on the 1st inst.

State Stocks well sustained, with some activity in Missouri; Louisianas have risen 3; Missouri, $\frac{3}{4}$, Virginia, $\frac{1}{2}$ per cent. City and County Bonds inactive, and without changes. Railroad Bonds firm but dull. Illinois Central Construction Bonds, after selling as high as 88 $\frac{1}{2}$, have fallen off 1 per cent.; Freeland Bonds have advanced 1 per cent.; Erie 1875 Bonds are firm at 91; Erie Second Mortgage have risen $\frac{1}{2}$; Erie 1871s, $\frac{1}{2}$; Harlem First Mortgage, $\frac{1}{2}$; Hudson River Third Mortgages, 2; New York Central 6 and 7 per cents. $\frac{1}{2}$ per cent.; Erie 1883 Bonds have declined $\frac{1}{2}$; Erie 1862, 1 per cent. Bonds not quoted at the Stock Exchange—no transactions, excepting a few purchases of Michigan Central 8 per cents., 1869; and of Terre Haute and Alton First Mortgage Railroad shares; trifling changes, with no speculative feeling. Chicago and Rock Island (ex. div.) $\frac{1}{2}$ per cent. higher; Cleveland and Pittsburgh, $\frac{1}{2}$; Cleveland and Toledo, 1; Hudson River, $\frac{1}{4}$; Michigan Central, 1; Michigan Southern, $\frac{1}{2}$; Panama, $\frac{3}{4}$ per cent. Cleveland and Columbus and Cincinnati has declined 2; Erie, $\frac{1}{2}$; New York Central, $\frac{3}{4}$; Reading, $\frac{1}{2}$ per cent. Money remains without change. Loans on call 6a7 per cent., chiefly at 7; first-class paper, 7a8, names less current 8a9. Exchanges weak, with the exception of France, limited business at 109 $\frac{1}{2}$ a3 $\frac{3}{8}$ for Sterling, and 5.17 $\frac{1}{2}$ for Francs. MARIE & KANZ.

American Railroad Journal

Saturday, April 12, 1856.

We take very great pleasure in presenting to our readers the first of a series of articles on the anatomy and physiology of the locomotive boiler and engine. The writer is an accomplished and thoroughly educated German Engineer, at present engaged as a draughtsman in the service of the Erie Railroad Company. These articles will be interesting to the mechanic as well as instructive to the student.

The Locomotive.

No. 1.

By THEODORE KRAUSCH, Civil and Mechanical Engineer.

Let us inquire into the different characters and constructions of machines, and who, in regard to capability, are the builders. Unfortunately we find more imperfect than perfect machines. Why is this? Simply, because of the partial or superficial comprehension of mechanical art. And here it may be observed that none but those educated, in the highest degree, practically and theoretically, can properly be considered machine builders. The builder must himself be capable of regulating the operation of the machine; so it is very necessary the locomotive builder should understand how to run an engine.

It is also of the highest importance, for a builder to be thoroughly familiar with the nature of machines; and how different is a locomotive from a stationary engine. This I will attempt to explain to the profit of the students of this art.

I select the stationary and locomotive engines, because the latter is one of the most important and interesting phenomena in our technical world.

This article is intended as a commencement of the task I have set myself, which is, to make students thoroughly familiar with the nature, principles and motions of the locomotive.

The uses which railroads have for locomotives, being various, require peculiar arrangements, as well for the machinery, as for the whole apparatus for the production of steam. The peculiar requisites arise from the nature of the locomotive engine. Let us notice them in detail.

A locomotive must possess considerable power, and the boiler, therefore, an unusually great power of evaporation.

This necessity might be doubted, in regard to locomotives on railroads, because the resistance upon them is, mostly, only .004 of the load, and a horse is able to draw, on a walk, 12 $\frac{1}{2}$ tons; but we require a speed 10 to 15 times faster. A horse draws such a load scarcely 2 $\frac{1}{2}$ miles per hour, while we expect 30 or 40 miles per hour of a locomotive. And it is as true that a higher rate of speed would require more steam, as it is indisputable that, to move the same load in one minute ten times as far, the boiler must supply ten times as much steam, in the same time, and the machine must be stronger in the same proportion. Then we must take into consideration, that the machine must be transported, as well as its supply of fuel and water; and that its weight does not increase in proportion to its power, so that the effect does increase with its power.

The principle and construction of the apparatus for the production of steam, is quite different from that of a stationary engine, in consequence of its being transportable. Weight and volume must be as little as possible; nor is a high chimney admissible. It is necessary to have a boiler with an inside furnace, containing a large fire-surface, with a strong artificial draft. What an enormous quantity of water such a boiler would have to contain, if it was designed on the principle of stationary engines, even if we should take only the quantity, which would be evaporated in 5 or 6 hours, and how large the fire-surface, where 10 sq. ft. produce only 1 lb. of steam per minute! How important, therefore, to increase the intensity of the fire to the highest degree; and this, unfortunately, is not possible without a very sharp draft.

The locomotive must carry such a quantity of water and fuel as is required for an uninterrupted run. The weight of these is considerable. The quantity of water required would be twenty times as large if the principle of condensing should be applied; but of this I will not speak further, as the high pressure principle is the only one applied to locomotives.

The balancing wheel and beam are also inadmissible in such an engine; the motion of the piston-rod is communicated, mostly, directly to the driving-shaft—giving to it a rotary motion—on which are two cranks placed at an angle, with each other, of 90 degrees.

To get a speed of from 20 to 40 miles per hour, the piston moves much faster, and performs also more strokes than a stationary engine, especially of like power. Such speeds will show, besides their disadvantageous consequences, also the difficulty of applying the principle of expansion.

The locomotion of such machines requires much more solidity and strength, in all its parts and connections, than a stationary engine, as well as arrangements to balance concussions; and also a necessity arises to modify the assisting apparatus. Feed pumps and safety valves are different, as also the regulator.

Some other particulars, in regard to locomotive engines, now come into consideration, as, the resistance of the air, which grows in the ratio represented by the square of the speed, already very great at a speed of 30 miles per hour; then the

amount of friction (adhesion) of the driving-wheels. The adhesion represents a support, and, consequently, it must be greater than the resistance. The load is thus limited by the adhesion and cannot be increased by a proportional diminution of speed. The adhesion of the driving-wheels depends on the weight of the machine which rests upon them, and the distribution of its whole weight. It is also necessary to find the according weight, for loading the drivers, in proportion to the effective power of the engine.

Finally, the locomotive is very remarkably different from the stationary engine, by working generally a variable load; its working is interrupted and not uniform. The load changes more or less by each run, freight is taken off or more put on; fuel is consumed; but the working is principally affected by the different grades. The locomotive is stopped not only at the terminal stations, but at others; and has to stop at any time that may be chosen.

It is not a question here, how to balance the momentary swings between the power and the weight, or to aim at a continued uniform motion, but how to govern and regulate its operation under all circumstances. The working of the locomotive is submitted to the engineer, and all arrangements must allow him not only to regulate the speed, but also, as occasion may require, to bring it to a dead stop, as quickly as possible, and if necessary, to reverse its motion from a forward to a backward one. The construction of the locomotive engine depends upon the use to which it is to be applied; in regard to this they are divided, at present, into five classes, as follows:

- 1st, Locomotives running express trains;
- 2nd, " " passenger " "
- 3rd, " " " and freight trains.
- 4th, " " common freight trains.
- 5th, " " freight trains over heavy grades.

We have received Mr. Prosser's last Circular of Boiler Tubes and Tools for Boiler Makers' use. Mr. Prosser keeps always on hand Krupp's best Cast Steel, which our readers will remember obtained the Council Medal at the London Exhibition in 1851. See advertisement.

The City Architect. Monthly. Folio. DAWITT & DAVENPORT; New-York.

Nothing could be more welcome than the present book, from Wm. H. Ranlett, whose practical knowledge and refined good taste have placed him among the foremost of our Architects. This work is to be issued monthly, and will be published at 50 cents a number. "It is not to be simply a collection of designs for showy house fronts, but a manual containing all the requisite information and practical directions for building a city from the start. It will, of course, contain not only plans and specifications for dwelling houses, shops, stores, manufactories, lecture rooms, academies, churches, theaters, court-houses, prisons, hotels, almshouses and hospitals, but also instructions for paving, flagging, constructing drains, culverts, docks, wharves, mills, street grading, laying out of squares, parks, and public grounds, and the fullest and most comprehensive directions will be given for ventilating, heating, and lighting all

classes of buildings." The City Architect will be completed in twenty numbers, and each part will be complete in itself and devoted to a special object.

Engineers cannot afford to be without it.

The "Vampire" Locomotive.

A good deal has lately been written of this Engine so well named. At present, the prospect is that just about the same success will attend its operation as followed the development of Capt. Ericson's last failure. The well treated reporters of the daily press are not at all times in a condition to judge accurately of velocities or the motion of machinery. They saw wonderful sights in Ericson's huge cylinders. It is hardly to be expected of machinists, who receive a stipulated sum for their work, that they should anticipate failure in any contrivance built for men having the money to pay for it. The *Vampire* has consumed money in construction quite in accordance with its principles of operation.

When at work, you gaze upon its huge awkward carcass and wonder how the power is supplied and how the combustion is fed, and where is all the fuel she is said to contain. So, too, if possessing a financial turn; especially, if accustomed to judge of the cost of machinery, you wonder where the \$40,000 of its cost are deposited. But that is nothing strange. We would not intimate that the *Vampire* could be built for less than forty thousand dollars. On the contrary, we think it might have been made to cost double that sum. The following extract is from the N. Y. Tribune of the 8th.

RAPID EXPERIMENTING.—The hot air locomotive "*Vampire*," which was briefly described in last Saturday's issue, ran off the track near Paterson during an experimental trial trip on Friday, while running at a rate judged to have been about *eighty miles per hour*. Fortunately no harm resulted either to the machine or its operators; the absence of any following train, even of a tender, conducing very much to the safety of such experiments at this extraordinary speed. The machine, it will be recollected, is impelled by heated air, or rather by both heated air and steam, in a manner invented by Mr. Phineas Bennett, and is, we think, the first locomotive ever tried with hot air as a motor in any form. It is, taken together, a very remarkable construction. It has cost, up to the present time, about \$40,000, but has never been altered in any material point from its original design. It has no tender, and carries its engineer on its back, or rather on its side, near the former end. Its weight, in running order, is forty-one tons, and fuel enough for a trip of 300 miles weighs only about three tons more, and is carried in its capacious furnace as a single charge. The working out of the principle has been most skillfully executed; the whole credit of this being due, we believe, to Mr. W. K. Thomas, one of the principal draughtsmen at the Novelty Works. The speed made at the moment of leaving the track as above neted indicates what the principle is capable of accomplishing, and we cannot repress a hope that the serious practical difficulties alluded to in our former notice may yet be surmounted.

Is it possible the Editors of that paper believed such a statement? A forty ton locomotive going at the rate of *eighty miles per hour*, and running off the track, is suddenly stopped by collision with some foreign body, and no injury is done. Why, the Engine would have been destroyed if it had rushed into a snow bank at that rate.

Eighty miles an hour. We will not contradict it. The statement is too silly to need correction. We do not believe the Engine has ever made over

six miles per hour. It is to be understood, that the air, which is furnished by the supply cylinders, is forced into the receiving chamber and furnishes oxygen to aid combustion, while, by its expansion, it exerts working pressure in common with the steam, which is introduced in the same compartment and vented by the exhaust.

Active measures are in course of preparation to make the surveys of the Mexican Railroad between the cities of Mexico and Vera Cruz. The company have contracted with Mr. Robt. B. Gorsuch for the Engineering. He is now on his voyage to the spot. He will take no assistants with him, but will make a reconnoissance with such aid as he can procure in Mexico. He has made no appointments, and will not till his return in the summer. Mr. Gorsuch is possessed of energy and physical vigor to combat the evils of a malarious climate, and is an accomplished Civil Engineer. We wish him a pleasant journey and a safe return.

York and Cumberland Railroad of Maine.

This road is to be sold on the 30th inst., under a judgment in favor of J. G. Myers.

The terms of sale may be found in an advertisement in another column.

The Milwaukee and Beloit Railroad.

The above company have just completed their organization and commenced the surveys under very favorable auspices. Subjoined are a list of the officers and Directors:

Horatio Hill, President, Milwaukee; A. O. Babcock, Secretary, East Troy; S. Andrews, Treasurer, Mukwonago; S. C. Kelsey, Chief Engineer.

Directors—Wm. J. Whaling, Milwaukee; E. H. Ball, S. Smith, East Troy; P. Meacham, Troy; C. Elderkin, Elkhorn; A. H. Barnes, Delavan.—Principal office, Milwaukee.

Cleveland, Columbus, and Cincinnati, and Columbus, Piqua, and Indiana Railroads.

Much excitement has been occasioned, and indignation expressed at the refusal of the Cleveland, Columbus and Cincinnati Railroad Company to pay the coupons on certain bonds guaranteed by them to the Columbus, Piqua and Indiana Company. Assuming a legal obligation to exist, then there is good ground for complaint. If no authority existed for making the guarantee, then any stockholder may object. The odium in such case necessarily falls upon the Board of Directors, who assumed to do an act for which they had no authority. If, too, the purchaser took a security which had no legal validity, he is at least one-half in fault. He should have looked to the title.

But whatever may be the rights in the case before us, and even admitting that there is no sufficient justification for the conduct of the C., C. & C. Co. in the premises, yet we are satisfied that the default which has been made will have an excellent effect. There was no good reason for the guarantee. Railroad companies are constantly in the habit of making similar wasteful and improvident contracts with each other. It is from this quarter that the greatest danger to railroad property comes. The explosion that has just taken place will show the danger of taking any security for which no sufficient valuable consideration has been received. Henceforward, the public will not buy them. Railroad companies, consequently, will not issue them, and a fruitful source of fraud and loss will be closed up. Confidence in railroad securi-

ties will be strengthened rather than weakened, should the C., C. & C. Co., even not be held. For what safety is there, so long as any body of Directors may enter into agreements not contemplated in the original scheme, and which may ruin (as is often the case) the work of which they have charge.

Population of Alabama.

The census in Alabama for the year 1855, taken under a special act of that State, classifies its present population as follows:

White males under 21 years.....	138,924
White males over 21 years.....	96,895
White females under 21 years.....	134,992
White females over 22 years.....	90,768

Total whites.....	460,979
Insane persons.....	474
Number of slaves.....	371,290
Free persons of color.....	2,449

Total inhabitants.....	835,192
Number of colleges.....	17
Number of academies.....	191
Number of common schools.....	1,098
Number of children at school.....	40,280
White children between 8 and 16 years.....	93,443

Amboy and Upper Mississippi Railroad.

A convention of the friends of the Amboy and Upper Mississippi railroad is to be held at Oswego, Kendall Co., Miss., on the 27th inst. It is said that stock to the amount of \$300,000 will be represented.

Railroad Earnings.

The following are the principal returns that have yet been published for March:

HUDSON RIVER R. R.

The earnings for March, 1856, were.....	\$241,141
March, 1855.....	167,079
Increase.....	\$74,061

NEW HAVEN R. R.

The receipts of this road for March, were—	
Passengers.....	\$63,783
Freight.....	10,000
Total.....	\$73,783
Less paid Harlem Co.....	3,834

Balance.....	\$69,948
March, 1855.....	63,977
Gain.....	\$5,971

LA CROSSE & MILWAUKEE R. R.

The earnings of the La Crosse and Milwaukee railroad company for the month of March, after deducting the proportion payable to the Milwaukee and Horicon railroad company, have been as follows:

From passengers.....	\$11,527
From freight.....	14,348
Transportation of U. S. mails and other services.....	1,350
Total.....	\$27,226

ILLINOIS CENTRAL R. R.

The business of the road for March last was \$137,400, against \$92,622 in 1855. The annexed statement shows that of the first three months of 1856, against the corresponding period of 1855:

	1855.	1856.
January.....	\$57,088	\$134,044
February.....	59,324	118,907
March.....	92,622	137,400
Total.....	\$209,035	\$390,351

—showing an increase of nearly 100 per cent.—If this should continue during the year, the aggregate would reach about \$1,900,000.

HARTFORD, PROVIDENCE & FISHKILL R. R.

The receipts of this road for the six months ending March 31st, were \$154,268, against \$99,468 for the same period in 1854-5. Increase, \$54,780.

KENTUCKY CENTRAL R. R.

The earnings of the Kentucky Central railroad for the month of March, were \$27,247.64.

Chattanooga and Cleveland Railroad.

We are pleased to be able to announce that the work upon this road has actually begun and under auspices most favorable for its early completion. Major Wallace, President, and John D. Gray, Contractor, have been in our city for the past week in consultation upon the final plans—arrangements and manner of operations, and nothing now remains but to go ahead, the preliminaries of which are now being made in preparing shanties, bringing men and tools upon the ground. The Tunnel route has been decided upon as the most practicable and will be adopted. Commencing at Chattanooga the road will leave the Western and Atlantic at Messrs. Eastman & Lees foundry, and strike through the valley crossing the Western and Atlantic near Col. Brabson's residence, and strike the ridge near Mr. Scott's, some four and a half miles from Chattanooga. Tunneling the ridge at that place it will again pass over the Western and Atlantic by bridge and thus to Cleveland. The distance will not vary far from thirty miles. The work will be completed in fourteen months at the farthest, tunneling and all. The tunnel will be a fraction over nine hundred feet, and in the whole distance there will be but one bridge of any importance to be constructed. Well may the citizens of Hamilton and Bradley counties congratulate themselves on the prospects before them and so soon to be consummated. This road forms a link in the great chain of roads that must ultimately, and at a time not far distant, constitute the *one great thoroughfare* from the North to the South and South-West. The work will be prosecuted with energy. Mr. Gray has had an experience of years in railroading and knows just what and how every movement should be made. We congratulate the friends of the enterprise that its commitment has been put in the hands of such men as Campbell Wallace and John D. Gray. The road is a certainty, and that within the time above named. —*Chattanooga Advertiser.*

Eaton and Hamilton Railroad.

The third annual report of this company shows their earnings for the year ending 31st December last, to have been—

Passengers.....	\$73,366
Freight	96,456
Mails, &c.....	2,107

Total.....\$171,929

—being an increase over 1854 of \$45,777, or 36½ per cent. The current expenses, including rent, interest, and depreciations, were \$154,424, leaving as net profits \$17,504.

The company have experienced their full share of the effects of 1854. Various methods of securing funds sufficient to thoroughly finish the line, have been tried, but without success. They have on hand an issue of mortgage bonds of \$175,000, besides property unsold worth over \$110,000. To the stockholders, the residents on the line, and the people of Cincinnati, the importance of sustaining the enterprise is strongly urged. The capital stock is set down, in round numbers, at \$460,000, and the indebtedness at \$910,000; making a total of \$1,370,000. Against this, there are 42 miles of road worth, on an average, \$30,000 per mile, or \$1,260,000. The real estate will bring its value at least up to the liabilities. The gross earnings last year were above 18½ per cent. on cost. Next

year these will doubtless reach 16 per cent. or 8 as net profits. Over \$27,000 were paid last year for the use of rolling stock. The necessity of operating with their own engines and cars is apparent. A large revenue will soon be drawn from the line. The Cincinnati and Chicago road, of which it forms a link, is already ironed from the north-west terminus to Logansport, 105 miles. Within the current half-year it is expected to be completed to Chicago. With this and the various connections in progress, the company look with confidence for further valuable accessions to their business. Their relations with the Cincinnati, Hamilton and Dayton Company have been harmonious. No accidents involving loss of life to passengers, have occurred.

GENERAL ACCOUNT.

Capital Stock.....	\$454,690
Cincinnati Loan	150,000
Sterling Bonds	130,784
Dollar Bonds	449,000
Domestic Time Loan.....	56,910
Bills and Accounts Payable.....	117,845

\$1,359,179

Transportation, Profit and Loss, and Dividend	179,546
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\$1,538,725

Construction	\$1,057,818
Equipment.....	97,822
Real Estate.....	187,018
Machine shop, building	13,232
Due from other companies, &c., &c....	55,265

\$1,410,650

Expense and Interest Accounts	128,075
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\$1,538,725

Cincinnati, Wilmington & Zanesville R. R.

At a meeting of the stockholders of this road, held at Circleville, the following gentlemen were elected Directors:—F. Corwin, J. A. Adams, Dan. McLean, D. Tallmadge, W. Medill, J. Boggs, Jr., and Isaiah Morris.

Strength of Compound Beams.

In the JOURNAL of the 8th of March was published a short article under this head. It is not in accordance with the common practice of this Journal to publish purely elementary matter, because the day has gone by, when the periodical press can profitably devote its space to this kind of reading. Our proper position as to practical science, is, to note important changes and improvements, when they occur, and to lend these columns to all discussion that shall tend to a more perfect development of existing laws. In short, while we are not teachers of primary pupils, we shall be always glad to aid in distributing that information that will be of value to readers. And nothing gives more pleasure than to know that among them are nearly all the Civil Engineers in the United States, and that this paper has been their accepted medium since the profession has needed one in this country.

With new papers conducted by young men, who have little knowledge, but inordinate ambition to appear something, it is not unusual to observe a different course. We have no objections. They begin a series of articles on Mechanics not quite equal in perspicuity to Lardner's little three shilling treatise, nor as profoundly scientific as the "Child's Multiplication Table." With the discussions of these papers the JOURNAL never meddles. They are worthy only of a boys' evening-

school debate. For once we depart from this course, because there is reason to believe a few readers desire it—not in accordance with our own pleasure.

A few weeks ago an individual living in the vicinity of New York sent to this office a slip on "single and double beams," which he had cut from that sheet and which he complained was unsatisfactory to his understanding, though he had not made the original inquiry. We declined noticing the article, because it would bring us into useless discussion. A second note contained a rewritten query much like the original, but sufficiently different to justify us in noticing it. The article containing a few thoughts concisely written and intended only for the young members of the Engineering profession was published in our issue of the 8th of March. Thereupon, we stir up a young sniperty-nicket out west who has been a flourisher in the quarrelsome sheet we have mentioned and who follows his master's benignant commands with commendable obedience.

Had the remarks on our articles been made by the editor of that sheet we should not have noticed them. Mr. Geo. L. Vose, however, is a respectable young gentleman and writes over his own name. Moreover, we have received other assurances that mechanics do sometimes assume what we said they did not. Mr. Vose is a young man, has little experience and evidently less reading. If he wants information, we refer him to Professor Barlow's Essays, to Tredgold, Muschenbrock, Ebbels, Hodgkinson's Experiments, &c., &c., &c. He has an ambition to be much in print. That may be commendable or it may not. If he or any other individual need assistance in our power they can have it by addressing us through the right channel. We are not oracles, however; Mr. Vose is. We do not know every thing; Mr. Vose does. We do not think our opinion will affect the practice of all the bridge builders; Mr. Vose thinks his will. We are not Chief Engineer of a Western railroad, though our last rodman enjoys that honor. Mr. Vose *does*, however, enjoy the honor of being a junior assistant to a Chief. We do not intend to annihilate Mr. Vose; Mr. Vose does intend to annihilate the RAILROAD JOURNAL. We do not intend to have the last word; Mr. Vose does, and he'll get it. We are in sound health with a hard skin; poor Mr. Vose is not in good health. He has a chronic disorder that seriously affects all his senses and prevents a clear perception of the phenomena of daily occurrences. On the 18th of March Mr. Vose was suffering a severe attack of that disorder; it is a species of *diarrhæa* known to the doctor as Egotismus. During the spasm Mr. Vose was strained nearly blind, so much so that he was unable to distinguish either from which. He was delivered of an intense desire to utter himself in print, which intention had been fiercely irritating his system a long time and which, when it was voided he sent carefully to his scavenger friend and mentor, whose drawer is the fitting receptacle for such excrements. The mentor seems to have admired the specimen; for it is carefully folded in the issue of March 29th, and presented to his gawking friends. We proceed to satisfy Mr. Vose, if it be possible, that he is not hurt.

First, let us take a general view of the letter of Mr. Vose. The succeeding copious extracts indi-

cate the tone of the article. "Fool." "I have—I did—I don't—I am—I ever—I do not deny—I do deny—I have seen." "NOW I MAINTAIN." This last effort seems to have exhausted Mr. Vose; for he eventually faints away into the modest "We" of editors, who are known to be exemplary in the exercise of that virtue, and winds up with a statement of interest because of recent date, viz:—"G. L. Vose."

Second. Having shown the tone of the article it is right next to present the object. The style of Mr. Vose is compact and his matter concentrated. So we are enabled by very brief analysis to ascertain his object, which is original and to him of paramount importance—more so indeed than to anybody else,—that object is—G. L. Vose.

Third. We will now strive hard to be serious because there may be young men anxious to learn some truth from everything they read, who will be misled if we do not set them right. Mr. Vose had but one object in writing. His mentor was confused and turned to Vose. Once in olden time Balaam couldn't speak, so his ass spoke for him. He has taken the liberty of assuming as doctrines held by us, certain stupidities of his own conception which he has valiantly battered.

Vose thinks it quite strange we should be widely acquainted with the mechanics of America; Vose has heard mechanics say, it strengthens a beam to saw it open and reclose it with tree-nails or bolts. Well, if he has, we can only say our associations have been different. We said that no mechanic ever uttered such a thought. We were too sweeping, we do not know all the mechanics. Vose does. We continued by describing the method actually pursued and we gave the reasons for it. (We refer the reader to the article.) The first reason for building such a beam, "it was impossible to procure a stick of clear timber of the size demanded for any thing like a reasonable amount of cost whether of labor of search or money." This without elaborating, seems sufficient to indicate the circumstances under which such beams are built; being in situations where suitable timber cannot be procured. Another reason given, was "the beam is stronger than a simple stick, if it has been properly constructed." Had a simple stick been selected under the circumstances that made necessary so expensive a beam (and yet the most economical to answer demands) what would it have been? Vose does not comprehend. We should be glad to walk with him through some forests where we have seen bridge contractors sweat. However we forget; Vose knows all the mechanics. We do not. We may suggest that all timber is not clear of knots and shakes—that all trees do not possess a straight grain. We are modest in saying so, because we know Vose will say, "I don't believe it yet."

We did not advise in any instance to split a stick of timber. We simply stated the reason for doing it where it actually takes place; under some circumstance compound beams are made of the same stick because of the poor quality of the timber and of such we said—

"If this beam be entirely constructed of the same stick of timber, as is frequently the case, you have still an advantage besides crossing the grains. By splitting and turning each alternate plank, end for end, you disperse the defects and splice by the weak points with sound timber, as

it is hardly possible that two unsound spots should come together on adjacent planks. Moreover, if the middle of the wood be shaky, the openings are bound as with cleats."

We did not specify poor timber, we should think this descriptive extract sufficient to indicate its own meaning. If any one misunderstand it we have no ambition to make it clearer.

We illustrated the motive for laying the grain in opposite directions. Vose says "but that the strength is increased any by reversing the grain I do deny; I have seen considerable in practice against any such conclusion and nothing in favor of it." Now as Vose declares this to be so, it cannot be otherwise. Of course we never saw any thing, have no experience;—Vose has seen everything and took all the experience when it was given out. He distributes it from time to time through the organ of "No. 210."

Let us see what Vose means by "reversing the grain." After quoting our illustration he says, "Now I maintain that the lattice has no points in common with the split and reverse piece; the grain of the wood in the lattice is at right angles to each other, (beautiful English, is it not?) while in beam the grains are parallel and not at all as in the lattice." If any boy of ten years can surpass that we desire to see him. We wrote an illustration of the effect of reversing the grain. To show the effect in the strongest possible light we supposed the grain to make an angle of 45° with the axis of the plank. Vose is determined we shall not introduce a cross grained plank, and so he tells us our lattice illustration was not correct at all, since, even after the grain is reversed in building a beam its direction remains parallel,—a condition of things that could exist only in a straight grained stick. Vose made this mistake; when he reversed the stick, he also inverted it; this made the fibres parallel. Allow us to assure Vose, that if he take two cross-grained planks and lay them together with the directions of the grain opposed, the fibres of the wood will cross each other and as shakes pursue the course of the fibres somewhat they will be secured by such an operation as if bound with cleats. We make the suggestion timidly.

Vose gives a reason for reversing sticks of timber. It is entertaining, and betrays a profundity of knowledge in the anatomy of woods quite worthy to rank Vose by the side of Boucherie, Lodiges and Dr. Lindley. He says "the beam is stronger at the end which is lowermost in the tree than at the top. If we split a beam, and reverse, we move one (1) strong end to the weak one (2) and one (3) weak one (4) to the strong one (5)." More beautiful English. Let us inform Mr. Vose that where timber is clear and straight, the reason for reversing is not as he supposes for increasing the strength. He is combating an error that does not exist. In large timbers it is sometimes customary to split them a single time and simply turn them inside out, bolting them together—this is a precautionary measure, and is designed only to examine the heart and to aid seasoning. Vose, in the full blaze of his dazzling stupidity, imagines that we said it strengthened a beam *vertically* to spread its factors.—He does not say so, but puts in evidence a quantity of his nursery whittlings, which he presumes to dignify with the name of experiments; these

are experiments on the vertical strength of the cross-section of the sticks, and were intended to upset all we said about beams. The truth is, we made the distinct remark, that "*lateral strength is gained by increasing the width of the stick, supposing it properly braced and bolted.*"

As to the experiments—they were made with small sticks of straight grain, of very sound, clear, well-seasoned wood. Any builder, who would cut up such timber to gain strength in building a bridge, would deserve a severe penalty for his immeasurable greenness—he should be condemned to spend a week—yes, we should say a whole entire week in the society of—Vose.

These experiments do not in any manner touch the matters of which we were speaking. Mr. Vose may not know it, but it is nevertheless true, that all the timber growing is not quite as fine as those little sticks of his—4½ feet long, 1 inch wide by 2 inches deep.

Vose says, "beam No. 2 (simply screwed) turned over while under a weight of 900 lbs.; while a solid one with the same unequal loading (the weight being placed on one side) did not upset because the halves were so completely joined by the natural fibre." This original argument is applied to a beam two inches wide and two inches deep, under a weight of 900 lbs. When one-half the beam came the other came with it—the same work was done by the weight, whether it were a simple or a compound beam.

It is sufficient for us to say, in conclusion, that we intended to lay down no new principles. We do not assume that we have the ability to do anything of the sort. We are not a fountain of knowledge; Vose is. We are a medium only by which some truths may be transmitted to those who look this way. We have learned enough to know that as compared to the sum of knowledge we have scarce entered on the threshold.

Having said all that is necessary as to the remarks made by "Sir Oracle," on what we chose to say of compound beams, will he permit us to give him some useful advice? We volunteer to give it, because we know his diffidence would never permit him to ask it of us.

And first, George, do not write so much—but read more. The neutral axis of wood is not exactly one-third the depth from the convex side, the distance is about three-eighths if we are to believe the best authorities.

Second, never sign your name twice to what you write; you open your article on "single and double beams," as you call them, by using the name "fool"—you close by writing "G. L. Vose." Now, George, do not repeat such an act. You will be set down as an egotist, and we know you are nothing of the sort. Be advised.

Again, child, do not be too free with the first person singular. As to Geo. L. Vose, it matters very little to any body what he "maintains" or what he "denies." When you state propositions they will be worth just as much as the reason on which they are based; nothing more. If they are cogent you will receive attention.

In an argument, never make use of facts to which the other side cannot by any possibility of chances have access. It is a trick resorted to by dishonest men to fortify weak positions. Your experiments do no harm—their results are all sufficiently correct; we did not make a statement

that they in the slightest disprove, even if they were of value.

When you have a position in your profession, or can produce men holding rank that gives them public confidence, to be your witnesses, then your experiments will be worth something.

Your worthy mentor in the same precious number that contains your letter, publishes an account of some remarks made by Robert Hunt, F. R. S., in a lecture before the Royal Cornwall Polytechnic Society, and asks his friends for information whether Robert Hunt is correct or not. So you have good precedent. Mr. Barlow being a Fellow of the Royal Society, and one of the most profound Civil Engineers of the day, it is only natural that you should repudiate his "old foggy" experiments and make some for yourself.

As to your experience, you haven't any yet that's worth sixpence outside your own pocket-book.—If you had very much more, you would be less satisfied with it than at present you seem to be.

The Illinois Central Railroad Company's Land Sales.

The Illinois Central railroad company's land sales thus far in 1856, have been:

Prior to March 1, 16,440.40 acres...\$251,013 55
Month of March, 26,880.14 acres... 327,331 54
Total\$578,345 09

The sales in 1855 were—

February and March.....\$137,683 84
April..... 250,847 96
May..... 673,219 08

Cincinnati and Fort Wayne Railroad.

The annual meeting of this corporation was held in Winchester, Ind., on the 21st of February last. From the report then presented we learn that the contract for constructing the road-bed, which had been entered into in 1854, was cancelled by mutual consent in the beginning of last year, on account of the impossibility of meeting the cash payments. Subsequently small sections were re-let, at lower prices, and more favorable terms. The work on these progressed slowly through the summer season; but they have since mostly been abandoned, from the want of means. The total expenditure on construction amounts to \$90,840; on engineering, to \$21,550; on general expenses, to \$24,789; on right of way and depot grounds, to \$41,357; on losses from sales of bonds and real estate, \$21,765—making an aggregate of \$200,254. The company's indebtedness consists of—

Eight per cent. real estate bonds, due 1864.....	\$98,000
Seven per cent. first mortgage bonds, due 1874.....	1,000
Bills and accounts payable for salaries, right of way, engineering, and construction	25,774
	\$124,774
Indebtedness, as per previous report	136,604

Decrease.....\$11,830

There is a contingent liability as endorser, amounting to \$9,036. The endorsement of \$100,000 of the bonds of the Four Mile Valley Railroad Company has been cancelled. The total payments for work done and other objects last year were \$34,956. The total subscriptions amount to \$278,221, of which \$231,925 have been collected in real estate; and \$31,749 in cash and notes; leaving \$9,547 still due. Of the real estate there has been disposed to the amount of \$41,681;

and mortgage executed on \$101,900; leaving \$81,976 unsold and free of mortgage. The length of road from Richmond to Fort Wayne will be about 86 miles. Efforts were made both in New York and Cincinnati to raise money on mortgage; but owing to the embarrassment of the time and the want of confidence felt in new railroad enterprises, these have proved unsuccessful. A strong appeal is made to the shareholders to put their shoulders still more resolutely to the wheel.

Numerous and important connecting lines are in progress. The Lake Erie, Wabash, and St. Louis road has been for some time in operation from Toledo to Fort Wayne, and will be completed through to Danville, Ill., this ensuing summer. By midsummer, the Fort Wayne and Chicago will be opened to Plymouth, 75 miles. The importance of securing the business thus presenting itself is pointed out. A road from Ft. Wayne running north to Grand Rapids, Mich., has, a large portion of it, been put under contract. Efforts to divert the business from these tributaries by way of Union have been made, and may prove successful, unless this undertaking is pushed forward in good earnest.

The Iron Trade of Scotland 1855.

It appears that the year 1855, though an oscillating one, has been one of prosperity to the iron manufacturers. Extensive transactions were made during the year in pig iron, at from 55s. to 82s. 6d.; in rails, £7 10s. to £8 15s.; in bars, £7 15s. to £9 10s.; in cast-iron pipes, £5 to £6 15s.; railway chairs, £4 15s. to £5 7s. 6d. per ton. And the foundries and malleable iron work continue still generally active and well employed.

Owing to the peculiar adaptation of Scotch pig-iron for foundry and forge purposes, the sphere of its consumption is rapidly extending, and it is penetrating quarters never reached before. Whilst the beneficial consequences which must ultimately accrue to the iron trade from the recent modification of the French import duties, and from the liberal movement of the Spanish government, in regard to the importation of British iron into that country, have not as yet been experienced.

We subjoin a statement of the number of furnaces in blast on the 31st of December in each month of the undermentioned years, and also the number of tons made:—

Year.	Furnaces.	Tons.	Year.	Furnaces.	Tons.
1849.....	112	690,000	1853.....	114	710,000
1850.....	105	595,000	1854.....	117	770,000
1851.....	112	760,000	1855.....	121	825,000
1852.....	113	775,000			

—Hunt's Merchant's Magazine.

The Frigate Merrimac.

The last Congress provided for the construction of six new war steamers of the first class, and of the number five have been launched—the Merrimac, at Boston; the Wabash, at Philadelphia; the Minnesota, at Washington; the Roanoke, at Norfolk, and the Niagara, at New York. The Colorado is on the stocks at Norfolk. The Merrimac, the first launched, has completed her equipment, and has gone to sea on her trial trip. The others will soon be ready for active service, and in model, speed, strength and force, they are, it is believed, superior to anything of their class among the navies of the Old World.

The Merrimac's spar deck is 281 feet long, from the knight heads to the taffrail, and is of 52 feet moulded breadth. The wales are 14 inches thick, seven on each side, which makes the actual measurement 53 feet 4 inches. The wales contain two through bolts clinched on the inside, and two short fastenings in each frame. Her bolts are all copper below one foot above the berth deck waterway. There have been driven into her hull 226,740 pounds of iron, and 139,778 pounds of bolt copper, 1½, 1¼, ¾ and ½ inch in diameter.

The measurement of the ship is, by carpenter's tonnage, 3,800 tons, and she is about 4,000 tons capacity. Draught of water, 23 feet.

The ship throughout is constructed in the most substantial manner. The *U. S. Nautical and Naval Journal*, in describing her, says:

The main keelson is bolted through each floor timber, with two copper 1½ inch bolts, clinched on the under side of the keel. The entire depth of the keel is two feet, with a three inch shoe beneath. The frame is of live oak, sided 14 and 13 inches—this is coaged together sideways, and doweled endways. The keel, stem and stern posts, are built inside of the ship 10 inches. The greatest siding size of the stern post is 29 inches in the wake of the shaft. The frame is filled in solid, and caulked 14 feet out from the keelson. The dead wood is coaged together throughout. The after dead wood is secured by copper bolts, the length of which are from 14 to 17 feet of 1½ and 1¼ inches diameter, driven with a pile hammer weighing 110 pounds. Forward, she has ten live oak breast hooks, fastened through and through with copper, under the water, and iron above. Aft, she has 7 breast hooks, that side 14 staunchions, white oak, and side 10 inches. Her dead rise is 3 feet at half floor.

The boiler and engine keelsons are of white oak, siding eighteen inches.

Garboard strakes, ten inches thick, and bolted through and through from side to side, make the seats of floor three feet in length. The bottom plank is of white oak, five inches thick. The after cants are fitted closely together as high as the berth deck, and bolted edgewise. The frame is crossed-strapped by iron bands, four and a half inches by three quarters inch, running from stem to stern, and from the spar deck clamps down to the turn of the bilge. These are bolted into each timber and into each crossing with one and a quarter inch bolts, riveted on the inside. The strapping aft runs down to the dead wood. The depth of the hold from the berth deck is eighteen feet.

Her engine is, we believe, about eight hundred horse power, and her propeller, one of Griffith's patent, has two blades of seventeen feet diameter. The blades may be altered to suit any angle from thirty-six to forty-four degrees. The apparatus is fitted in a manner to admit of its being hoisted to the spar deck, and lowered to its bearing without trouble, that she may use her steam or not at pleasure. Her interior arrangements and all her accommodations for officers and men are spacious and well ventilated.

The Merrimac rates as a 40 gun frigate, but can carry metal to make her equal to a ship-of-the-line of 90 guns, of the old class. She is armed with twenty-four 9 inch shell guns, each weighing about 9,000 lbs.; and fourteen 8 inch shell guns, each weighing about 7,000. She has also (mounted fore and aft) two heavy pivot 10 inch shell guns, weighing 12,000 lbs. each, and throwing 100 lb. shells. The "boat guns" of the Merrimac, three in number, were cast at the Washington Navy yard, and can either be used in boats or mounted as field pieces, to use on shore. One is a twelve pounder, weighing 430 lbs., another, a twelve pounder, weighing 760 lbs., and the third a twenty-four pounder, weighing 1,200 lbs.

The guns and carriages are of peculiar construction; the former very large at the breech, and beginning to taper abruptly near the centre, terminating small at the muzzle. These guns are provided with an elevating screw, and will elevate 9° 45' and depress 7° 30'. They are provided with carriages of a new model, having no after trucks. The guns thus provided will be more steady upon the deck, and not so liable to break from their breechings at sea; while in firing, the recoil will be sufficient to throw them back.

ULSTER IRON.

THE subscribers keep on hand a full assortment of this superior make of iron, suitable for railroad, locomotive repairs, &c., &c. EGGLESTON, BATTELL & CO., 166 South St.

SALE OF THE MAYSVILLE & LEXINGTON R. R.,

with all its Property and Franchises, Locomotives, Cars, &c.
JAMES PUNNETT and others, plaintiffs, against **THE MAYSVILLE & LEXINGTON RAILROAD COMPANY** and others, defendants.—By virtue of the Judgment of the Fayette Circuit Court, rendered in the above case, I will sell, at public auction, on **Wednesday, the 23rd day of April, 1856**, at the Public Square, in the City of Lexington, State of Kentucky—

THE MAYSVILLE & LEXINGTON RAILROAD;
both that part of the road which is completed and the part unfinished; embracing the road bed, and superstructure where the same is laid down, the right of way, and all lots of land in and adjacent to the road track, with all the buildings, stations, car-houses, and improvements belonging to said railroad, together with the franchises of the Maysville and Lexington Railroad Company; all of which will be sold together, upon credits of six, twelve, eighteen, and twenty-four months, in equal instalments.

At the same time and place, I will also sell all the Lots of Land belonging to said Company, and not adjacent to the railroad track—consisting of a lot of land in the City of Lexington, a tract of land in Fleming County, and town lots in Paris and Millersburg, on credit of six and twelve months, in equal instalments.

And at the same time and place, I will sell all the Locomotives, Freight and Passenger Cars, Cross-Ties, &c.—consisting in part of two locomotives and tenders of twenty-four tons each, three passenger cars for sixty passengers each, one entirely new and all in good order; seven box freight cars, eleven platform cars, eleven tops for platform cars, five gravel cars, and a top for another; fifteen pairs of car wheels, a hand car, a lot of bridge and car iron; 9,600 cross-ties near Maysville, 1,380 of which are of locust and the remainder of oak; about 6,000 cross-ties along the line of the railroad between Lexington and Millersburg. The new passenger car, two freight cars, and the tops for platform cars, are in Maysville, all the other rolling stock is in Lexington, and the whole is of 4 feet 8½ inches gauge. All to be sold on a credit of six months.

The purchasers will be required to execute bonds for the purchase money, having the force of Judgments, with good security, to be approved by me, of one of the following kinds, to wit:—1. Personal security. 2. First Mortgage Bonds of the Maysville and Lexington Railroad Company. 3. Mortgages in real estate in counties near this railroad or the Covington Railroad. 4. State and United States Bonds. 5. A First Mortgage on a productive railroad.

The property will be exhibited to all persons desirous of purchasing, by the undersigned, who will be found in Lexington Ky. or by A. M. JANUARY, at Maysville. Letters of enquiry, addressed to me, will be attended to. **EBEN MILTON,**
Receiver and Commissioner,
LEXINGTON, Kentucky

2m8



NOVA SCOTIA RAILWAY OFFICE.
Halifax, March 22nd, 1856.

Extension of Trunk Nelson's, Shubenacadie.

TENDERS FOR GRADING, CONSTRUCTION, &c.

TENDERS will be received at this office, until **SATURDAY**, the 10th day of May next, at 12 o'clock, noon, for the Construction and Finish of that portion of the Railway extending from the end of Contract No. 7, to Nelson's, Shubenacadie river, on the Eastern Road leading to Truro, including road alterations—the distance being about ten miles.

The Board will furnish Rails, Chairs, Spikes and Side Keys. The work to be completed by the 30th day of June, 1857.

Plans, specifications and quantities may be seen on the ground, on Thursday the 1st day of May, and afterwards at the Engineer's Office.

An Engineer will attend persons desirous of Tendering, and meet them where the line crosses the Nine Mile River Road, at 10 o'clock A.M.

Tenders to be accompanied by the address of parties tendering, and the names of their Bondsmen.

6114

JOSEPH HOWE, Chairman.

New York and Erie R. R.

On and after **Monday, Dec. 31st, 1855**, and until further notice

PASSENGER TRAINS

will leave Pier foot of Duane street, as follows, viz:—

BUFFALO EXPRESS, at 7 a.m., for Buffalo direct, without change of baggage or cars. At Hornellsville this Train connects with a Way Train for Dunkirk and all stations on the Western Division.

MAIL, at 8¼ a.m. for Dunkirk and Buffalo, and intermediate stations.—Passengers by this train will remain over night at Oswego, and proceed the next morning.

NEWBURGH EXPRESS, at 4 p.m., for Newburgh direct, without change of cars.

ROCKLAND PASSENGER, at 4 p.m., via Suffern's, for Piermont and intermediate stations.

WAY PASSENGER, at 4 p.m., for Otisville and intermediate stations.

NIGHT EXPRESS, at 5 p.m. for Dunkirk and Buffalo.

EMIGRANT, at 5 p.m., for Dunkirk and Buffalo and intermediate stations.

No Train will leave on Sundays.

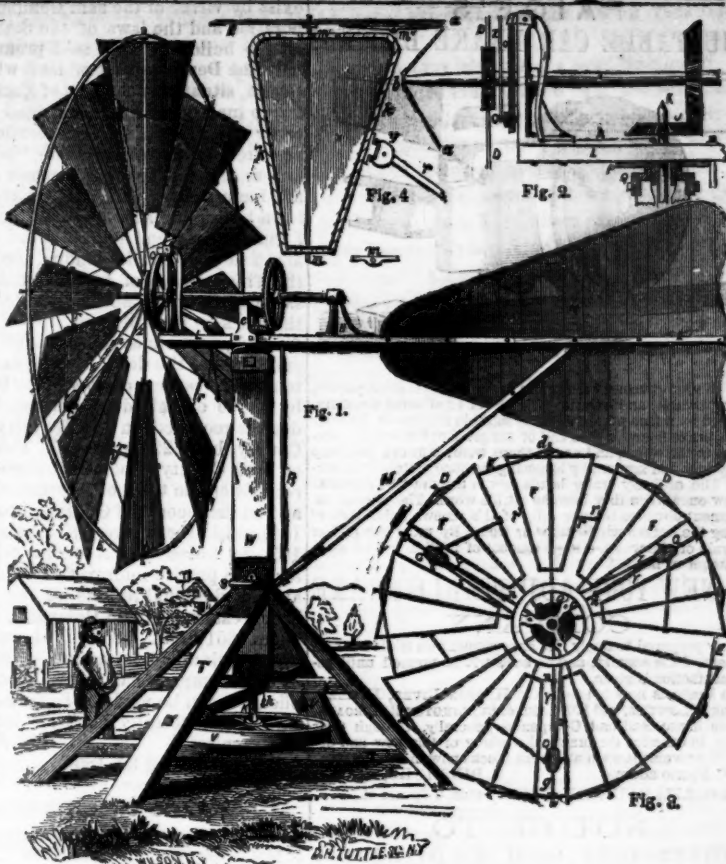
These Express Trains connect at Elmira, with the Elmira & Niagara Falls Railroad, for Niagara Falls, at Buffalo and Dunkirk, with the Lake Shore Railroad for Cleveland, Cincinnati, Toledo, Detroit, Chicago, etc.

117

D. C. McCALLUM, General Sup't.

THIS MILL IS ADMIRABLY ADAPTED TO RAISING WATER AND SAWING WOOD AT RAILROAD STATIONS.—It is entirely self-regulating thus: The tension of the springs Y, keeps the sails F, turned or set to receive the power (wind), and the centrifugal force (of the weights G) whenever the velocity becomes too great, turns off the power, by turning the sails out of, or edgewise to, the wind. Unlike steam or horses, it requires no attendance, eats no oats, burns no fuel, sets fire to no buildings, but is always reliable when there is wind. Sufficient tank capacity should be supplied to provide for calms. Sizes of mills vary from 6 feet in diameter of wind-wheel to 50 feet, and prices from \$60 to \$800. A mill giving an average of about 5½ horse power, 16 feet in diameter, will cost \$200. All requisite information will be furnished on application to this office, where a model may also be seen. These mills are about being put up on the Boston & Worcester and Mobile & Ohio railroads where their operation may also be witnessed. Address or call on

N. DAVIDSON, General Agent, No. 9 Spruce st., New York.



**FRANK G. JOHNSON'S
PATENT SELF-REGULATING WINDMILL,**
Brooklyn, N. Y.

ELLIOTT & CO., NO. 4 WILLIAM STREET, NEW YORK.

(ONE DOOR SOUTH OF BEAVER STREET.)

RAILROAD AGENTS

AND

COMMISSION MERCHANTS,

PURCHASE AND SELL ON COMMISSION

FOR RAILROAD COMPANIES.

RAILROAD IRON—They contract upon the most favorable terms for the delivery of Rails either on board ship in England or in the United States.

LOCOMOTIVES & CARS—Having connection with some of the best builders, they furnish the best at the lowest rates for cash or good paper.

WHEELS & AXLES—They are Agents for two of the best Forges, and one of the first Wheel Makers, and can supply orders with promptness and to give satisfaction.

CHAIRS & SPIKES—They are authorized to sell wrought and cast iron chairs and spikes from the best known makers at the lowest rates.

All orders will be promptly filled and at the lowest market prices.

CAR FINDINGS in variety.

Railroad Secretaries are particularly requested to forward by mail copies of their Reports from the first

ELLIOTT & CO.,
No. 4 William st., N. Y.

Notice to Contractors.



M. C. AND L. R. R. OFFICE.
Clarksville, Tenn.

THE MEMPHIS, CLARKSVILLE, & LOUISVILLE RAILROAD CO. invite sealed proposals for grading sections 1 to 30. Work generally heavy. Bridges—Cumberland, 500 feet long; Red River, 400 feet long. Materials—Earth, Rock, Loose Rock, and Hardpan. Means of the Company—Cash; Tennessee State Bonds; City and County Bonds. Time of completion—December 1st, 1857. Time of letting—April 24th, 1856. Plans, profiles, and specifications may be seen at the office.

G. B. FLEECHE,
Engineer in charge.

W. B. MUNFORD,
Pres't M. C. & L. R. R.

SCOTCH IRON.

PIG IRON, Bars, Boiler Plates, Sheets, Hoops, Railroad Bars, Tyres, &c.

CALEDONIAN PATENT LAP-WELDED TUBES,
PATENT CAST IRON PIPES—made from best Scotch pig iron—cast vertically and drill easily.

6m13

WILLIAM ROY, Agent,
74 Broadway, New York.

Railroad Iron.

1,000 TONS 57 lbs. weight on hand and for sale by **THEODORE DEHON,**
10 Wall st., near Broadway, N. Y.
March 13th, 1856. 4111

Railroad Iron Wanted.

CONTRACTOR'S OFFICE MINERAL POINT RAILROAD.
No. 31 Pine street, New York.

THE subscriber desires to purchase twelve hundred tons of T rails, Erie pattern, 56 lbs. to the yard, for which proposals are invited.

317

A. WILKINS.

Philadelphia, Wilmington & Baltimore Railroad.

UNITED STATES MAIL ROUTE TO THE SOUTH AND WEST.



Trains will leave the Southern and Western Station, corner of Broad and Prime streets, Philadelphia, at 8 30 am. 12 45, 3 and 11 pm.

FARE BY THROUGH TICKETS TO THE SOUTH.

From New York to Wilmington	\$15 50
do do Norfolk	8 50
From Philadelphia to Wilmington	14 00
do do Norfolk	6 50
do do Petersburg	9 00
do do Richmond	5 00

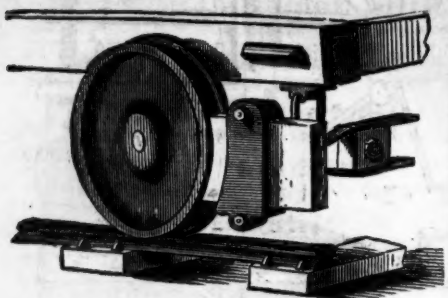
FARE BY THROUGH TICKETS TO THE WEST.

From New York to Cincinnati	\$13 50
do do Louisville	14 50
From Philadelphia to Cincinnati	11 00
do do Louisville	12 00
From New York to Indianapolis	16 00

An extra charge will be made for meals and state rooms on board the boat.

GEORGE A. PARKER, Sup't.

PAIGE'S ADJUSTABLE CAR BRAKE BLOCKS!



BY this improvement the brake heads or shoes are separate, removable, and adjustable blocks of hard wood scantling, clamped by a face plate or cap to suitable sockets on the ends of the brake beams. The end of the grain of the wood is presented to the wheel, and as the shoes wear, they can be set up to any required amount by loosening the face plate of the socket. The ordinary brake heads now in use must be replaced by new ones when they become a trifle worn. The present improvement obviates the necessity of this renewal, also that of shoeing the brakes with leather or iron. By using the end of the grain of the wood, a large amount of friction is had without danger of fire.

The NEW YORK ADJUSTABLE BRAKE COMPANY

are now prepared to apply this improvement on trial to cars in any part of the country, and no sales will be pressed until entire satisfaction is given.

The Brake is now in use on the HUDSON RIVER, HARLEM, BOSTON & LOWELL, and RUTLAND & BURLINGTON RAILROADS, and we invite Railroad Companies generally, through their Agents, to examine the practical working of this new and decided improvement upon all Brake Blocks now in general use.

Please address C. DINSMORE, Agent.
DINSMORE'S RAILWAY GUIDE Office, 9 Spruce st., N.Y.

NOTICE TO Contractors and Capitalists.



San Francisco and Sacramento Railroad.

SEALED PROPOSALS will be received by the undersigned in New York City from April 10th, until May 10th, 1856, for the construction and equipment entire of the SAN FRANCISCO AND SACRAMENTO RAILROAD, California, from the City of Sacramento to the City of Beucias, a distance of 58 miles.

The Railroad is upon the main trunk line from San Francisco to the interior, over which passes three-fourths of the entire inland trade and travel to California, saving 30 miles in distance over the present route, reducing the time from 8½ to 3½ hours, and passing through the fertile lands of Solano and Yolo Counties, the richest agricultural counties in the State. It connects at Sacramento with the Sacramento Valley Railroad now built and running, and is the key to San Francisco for all lines running from Northern and Eastern California.

Maps, profiles, and specifications can be seen and every information obtained upon application to the undersigned Room No. 7, Metropolitan Bank Building, cor. Broadway and Pine st., New York.

THEODORE D. JUDAH,
Chief Eng'r and Commissioner, S. F. & S. R. R.
New York, April 7th, 1856. 1m15

York and Cumberland R. R.



NOTICE.

To the York and Cumberland Railroad Company, and all whom it may concern.

BY virtue of the Deed of Conveyance to me, executed by said Company, and of the Trust powers therein named, which deed bears date the Sixth day of February, A. D., 1851; and by the concurrence of several of said bondholders, as well as in my own behalf, as grantee and bondholder, this is to give notice to said Company, pursuant to the terms of said deed, and to all whom it may concern, that for breaches of the conditions and covenants in said deed contained, by said Co., to and with the undersigned as contractor, and to and with the bondholders, described in said deed, I did, on the Thirty-first day of March last, past, and for the purposes of the deed and trust aforesaid, take full and complete possession of the premises and property therein described, both "personal and real, rights of way and corporate franchise, with all its privileges and immunities, as the same

exist by virtue of the said Company's act of incorporation and the laws of the State, together with all the buildings upon said premises," excepting only the Depot and lot of land whereon the same stands, situated in the City of Portland, but meaning to include all iron rails, road-bed, track, and other structures of said Corporation, that has been acquired by said Corporation, "be the same more or less, and throughout the whole line of said road, and including all cars, engines and furniture, that have been purchased by said Company;" and that I shall dispose and sell the same for the purposes aforesaid, by public vendue, on WEDNESDAY, the Thirtieth day of April current, at the Depot of said Company, in the City of Portland, at Ten of the clock in the forenoon, to the highest bidder, for cash, payable at the close of the sale, and on execution of the deed of sale, and to the full extent of the powers derived to or by me, under and by virtue of said deed, and not otherwise. Said deed is recorded in the Registry of Cumberland County, book 226, page 467; and in the Registry of York County, book 216, page 472; and in the records of the town of Westbrook, Vol. 3, page 20, and in the records of Gorham, book 1, pp. 144, 145, 146, and in the records of Portland, Vol. 7, page 145—to which several records reference is made for more precise information, as also to the several printed annual reports of the acting Directors and Treasurer of said Company, in August of the years 1851, 1852, 1853, 1854 and 1855. For all other desirable information which the Treasurer of said Company can furnish from his books, application can be made to S. W. EATON, Treasurer, who will cheerfully facilitate inquiry respecting the premises.

Portland, April 3d, 1856. 3t15

J. G. MYERS.

Notice to Contractors.



OFFICE OF RACINE AND MISSISSIPPI R. R. CO.
Racine, Wis., March 15th, 1856.

PROPOSALS will be received at this office until the 10th day of April next, at 12 o'clock m., for the Grading, Masonry and Bridging of the second division of the Racine and Mississippi Railroad, being from Beloit to Savanna on the Mississippi river, a distance of about sixty-eight miles. The whole work to be completed during the present year and in time for laying the track previous to January 15th, 1857. This work lies wholly through the northern counties of Illinois west of Rock river. The country is densely populated and unsurpassed in point of health and abundance of supplies.

Proposals will also be received at same time for the construction of the Bridge across Rock River at Rockton.

Plans, profiles, and specifications, together with all necessary information can be obtained on application at this office on and after the 25th instant.

HENRY S. DURAND, President.

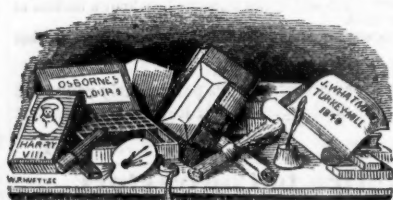
For general information parties can refer to the Company's Agents in New York, Messrs. CLARK & JESUP, No. 70 Beaver st.

The time for receiving proposals as above is hereby extended until the 20th day of April.

STATIONERY.

Hufty's

Engineers, Architects and Draftsmen's
STATIONERY EMPORIUM.



WHATMAN'S TURKEY MILL DRAWING PAPER, Tracing paper, Plan and Profile, Protractors, Drawing Pins, Faber's Jackson's and other makers' Pencils; Field, Level, and Memorandum Books of various patterns; Mathematical Instruments, Tape-lines, Mouth Glue, Cross Section paper, Triangles Label Brushes, Gum Bands, Maiden Gum, Red Tape, Ink, Inkstands and sand, Water Colors, Pallets, Patent Binders for letters, Portfolios, etc., together with a general assortment of Stationery and Blank Books.

All goods packed with care, and forwarded to any part of the United States,

JOSEPH HUFTY,
Successor to H. L. Lipman,
189 Chestnut St., Philadelphia.
May 14, 1844.

BUSINESS CARDS.

H. M. SMYTH, COMMISSION MERCHANT

AND
MANUFACTURERS' AGENT,
No. 13 Doane St., BOSTON.

American and Foreign bar, boiler, and pig iron, Tyres, Axles, wrought iron Wheels, boiler, water and gas Tubes, iron and steel Wire, boiler and tank Rivets, Steel, Files, Emery, &c.

Rollins & Haviland,

STOCK BROKERS,
38 Exchange Place NEW YORK.

JOHN T. ROLLINS. WALTER HAVILAND.

London Agency for Sale of Bonds, &c.

MESSRS. LANCE & CO. are making more generally known in England, the great advantages of American Securities for investment.

During the present year Messrs. Lance & Co. have disposed of a large amount of American and Canadian Railway Bonds, and are fast extending their connection, they will be happy to correspond with parties having good Amer. Securities for sale.

Messrs. LANCE & Co. have had experience in the purchase and shipment of iron, and offer their co-operation to those about to negotiate for the disposal of bonds and the purchase of rails.

P. S.—Presidents of railway companies are requested to favor Messrs. L. & Co. with Exhibits or Reports of their companies as published.

LONDON, Oct. 1855. 10 Regent st., WATERLOO PLACE. 6m46

Meigs & Greenleaf,

Office No. 23 William st.

WILL give prompt attention to the purchase and sale of STOCKS, BONDS, &c., strictly on commission. Orders respectfully solicited.

CHAS. A. MEIGS, late Cashier Am. Ex. Bank.
A. W. GREENLEAF, late of No. 2 Wall st.

REFERENCES: American Exchange Bank, Bank of the Republic, Metropolitan Bank, Merchants' Bank. 1y18

ELLERY & GIBBONS,

No. 10 WALL ST.

BANKERS, DEALERS IN DOMESTIC AND FOREIGN EXCHANGE, &c., are prepared to negotiate Stocks, Bonds and Financial Securities in general.

REFERENCES.

D. R. MARTIN, Pres't Oc'n Bk, CORNELIUS W. LAWRENCE, N. Y. Esq., N. Y.
SILAS K. EVERETT, of Everett DREXEL & Co., Bank's Philad.
& BROWN, N. Y. SAMUEL WILLETS, Pres't of
WELLS, FARGO & Co. 18tf Am. Exchange Bank, N. Y.

Lord & Wright,

Counsellors at Law, Cincinnati, Ohio. 18t

ENGINEERS.

LITHOGRAPHIC AND DRAUGHTING.

Office 131 Fulton st., NEW YORK.

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CIVIL AND MECHANICAL ENGINEER,

employs Draughtsmen, and is at all times prepared to execute his work with promptness. He will furnish Architectural and Mechanical Drawings, Linear and Perspective, and if desired they will be lithographed in the HIGHEST STYLE OF THE ART.

W. G. ATKINSON,

CIVIL ENGINEER, SURVEYOR AND DRAFTSMAN,
CUMBERLAND, Maryland.

RAILROAD routes located, planned and estimated. Maps and Reports furnished. Researches made for Coal, Iron, Copper, Lead and other Minerals, Metals, &c. Contract work in Tunnels and heavy Graduation measured and reported in detail. Topographical Drawings executed and Lithographs supplied by skilful artists. Mines explored, new Works laid off, and Geological Plans prepared. 8tf

ENGINEERING.

THE undersigned is prepared to furnish Specifications, Estimates and Plans, in general or detail, of Steamships, Steamboats, Propellers, High and Low Pressure Engines, Boilers, Mill Work, etc., etc. Particular attention given to the procuring and superintending of Locomotives, Tenders, Cars, and Railway Machinery of every description.

General Agent Ashcroft's Steam Gauge, Allen & Noyes' Metallic Self-adjusting Conical Packing, Dudgeon's Hydraulic Jack, Sewall's Salinometers, etc., etc.

Acts as Agent for the purchase or sale of, and has always on hand, Steamers, Locomotives, Engines, Boilers, Machinery, etc.

CHAS. W. COPELAND,
Consulting Engineer,
64 Broadway, N. Y.

1y17

ENGINEERING WORKS.

LYONS' TABLES.

To Civil Engineers and Contractors.

JUST PUBLISHED—A set of Tables for finding, at a glance, the true cubical content of Excavation and Embankments for all Bases, and for every variety of Ground and Side Slopes. By M. E. LYONS, Associate Engineer, Lebanon Valley R. R.

SHEET NO.	SHEET NO.
1. General Table for all Bases and all Slopes.	13. for Base 18ft. Slope. 1 1/2 to 1
2. For Side Hill Cuts and Fills.	14. " 20 " 1 1/2 to 1
3. Base 12 ft. Slopes 1 1/2 to 1	15. " 24 " 1 1/2 to 1
4. " 14 " 1 1/2 to 1	16. " 24 " 1 1/2 to 1
5. " 15 " 1 1/2 to 1	17. " 25 " 1 1/2 to 1
6. " 15 " 1 1/2 to 1	18. " 26 " 1 1/2 to 1
7. " 15 " 1 1/2 to 1	19. " 28 " 1 1/2 to 1
8. " 16 " 1 1/2 to 1	20. " 30 " 1 1/2 to 1
9. " 16 " 1 1/2 to 1	21. " 30 " 1 1/2 to 1
10. " 18 " 1 1/2 to 1	22. " 30 " 1 1/2 to 1
11. " 18 " 1 1/2 to 1	23. " 32 " 1 1/2 to 1
12. " 18 " 1 1/2 to 1	24. " 32 " 1 1/2 to 1

The Tables are printed in clear, bold type on tinted paper; sheets 25x16 inches. They may be used by candle-light without injuring the eye-sight. Each sheet is complete in itself, and embraces all that is wanted in connection with the Base or Slope designated, whether on level or side hill cross section.

Sold in separate sheets, at 25c. each, or the whole handsomely bound in cloth in one volume for \$7.50, by JOSEPH HURTT, 139 Chestnut st., Phila.; WM. MINIFIN, Baltimore, Md.; NEWBLE & SON, Alexandria, Va.; MCCLURE & CO., Toronto, C. W.; also

For sale at the office of this paper.

SCIENTIFIC WORKS,

PUBLISHED BY

D. APPLETON & CO.,

346 and 348 BROADWAY, NEW YORK.

Appleton's Dictionary of Mechanics, Machines, Engine Work, and Engineering, 2 vols. 8vo.	\$12.00
Bourne's Catechism of the Steam Engine, Bourne's Treatise on the Screw Propeller, 4to	\$9.00
Gillespie's Treatise on Surveying, 8vo	\$2.00
Griffiths on Marine Architecture	\$10.00
Henck's Field Book for Railroad Engineers	\$1.75
Holby's Dictionary of Scientific Terms, 12mo.	\$1.50
Knapen's Mechanic's Assistant	\$1.00
Lyell's Principles of Geology, 1 vol. 8vo.	\$2.25
Lyell's Manual of Geology, 1 vol. 8vo.	\$1.75
Overman's Metallurgy, 8vo.	\$5.00
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Ure's Dictionary of Arts, Manufactures, and Mines, 2 vols, 8vo. new edition.	\$5.00

D. APPLETON & Co. have on sale all the important English Engineering Works. 5tr

IMPORTANT TO ENGINEERS, RAILROAD CONTRACTORS, and others.

Messrs. WILEY & HALSTED,

351 BROADWAY, NEW YORK,

BEG to inform those interested in Engineering, either Civil, Mechanical, Military, or Naval, that they keep constantly on hand, and offer for sale on reasonable terms, all the best and most approved works on the above-mentioned subjects, both

ENGLISH and AMERICAN.

They will also continue to supply the following Magazines punctually to subscribers at the annexed prices per annum:—

Civil Engineer and Architect's Journal	\$7.50
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W. & H.'s CATALOGUE OF ENGINEERING AND MECHANICAL WORKS GRATIS TO ALL WHO DESIRE IT.

W. & H. will give especial attention to the importation of Engineering and Architectural works, either by the single volume or quantity, from England, France, and Germany.

ENGINEER'S FIELD BOOK

By C. S. CROSS, Civil Engineer.

THIS work is designed as a pocket companion, and embraces all the necessary tables for prosecuting railroad surveys, in the most compact form.

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 - 3d. Application of the Prismoidal formula in determining the quantities of excavation and embankment of canals and railroads from transverse sections.
 - 4th. Excavation and embankment tables for expeditiously determining the cubic yards from mean area.
- It is a plain, clear and most valuable book for practical Railroad Engineers.

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FOR

Railroad and Civil Engin'rs.

Containing new, exact, and concise methods for laying out Railroad Curves, Switches, Angles, and Crossings; the staking out of work, levelling; the calculations of cuttings and embankments, earthwork, &c.

BY OLIVER BYRNE.

A FEW NOTICES FROM ENGINEERS AND THE PRESS.
"It is an excellent book. Out of half a dozen pocket books of that sort which I have and of all I have seen, it is DECIDEDLY THE BEST."

Byrne has a good many new things in his book and he puts all in a better shape than most writers. Much of this will be useful to me immediately, as I shall be calculating EXCAVATIONS and EMBANKMENTS considerable this year. —From a practical Engineer at the South.

"This little volume is intended for the pocket of the practical Engineer and is filled with valuable rules and directions to aid him in his work." —Albany Evening Atlas.

C. SHEPARD & CO., Publishers, 152 Fulton st., N. Y.

N.B.—Price \$1.50, and sent by mail free of postage. The above book is got up in the most convenient style for Engineers, being in tucks, and containing blank paper for drawings with a drawing pencil attached. 3m7

New Works on Civil Engineering.

THE Field Practice of laying out Circular Curves for Railroads.—By JOHN C. TRAUTWINE, Civil Engineer—3d edition in pocket-book form.

A new and rapid method of Calculating the Cubic Contents of Excavations and Embankments, by the aid of Diagrams.—By John C. Trautwine, Civil Engineer—2nd edition with 10 Copper Plates.

Price One Dollar each—postage on the Curves Three Cents—and on the Excavation and Embankments, Six Cents.

For sale by WILLIAM HAMILTON,

Hall of the Franklin Institute, Philadelphia.

January 12, 1884.

PROFESSIONAL CARDS.

Atkinson, T. C.,

Mining and Civil Engineer, Alexandria, Va.

Barnes, Oliver W.,

Chief Eng. Pittsburg and Connellville R.R. Co., Pittsburg, Pa.

Edward Boyle,

Chief Engineer, 2d, 3d, and 9th Avenue Railroads New York Office 123 Chambers st.

Clement, Wm. H.,

Little Miami Railroad, Cincinnati, Ohio.

James Converse,

Chief Engineer Galveston, Houston & Henderson Railroad, Galveston, Texas.

Alfred W. Craven,

Chief Engineer Croton Aqueduct, New York.

Charles W. Copeland,

Steam Marine and Railway Engineer, 64 Broadway, New York.

Davidson, M. O.,

Civil and Mining Engineer. Office Swanton Coal and Iron Co., 61 Exchange Place, BALTIMORE, Md.

C. Floyd-Jones.,

Division Eng'r 3d and 12th Divisions, Illinois Central R. R., Vandalia, Ill.

Gay, Edward F.,

Civil Engineer, Philadelphia, Pa.

Gilbert, Wm. B.,

Syracuse and Binghamton Railroad, Syracuse, N. Y.

Gzowski, Mr.,

St. Lawrence and Atlantic Railroad, Toronto, Canada.

Grant, James H.,

Nashville and Chattanooga R. R., Nashville, Tenn.

Theodore D. Judah,

Chief Engineer, Sacramento Valley Railroad, Sacramento, Cal. 1y23

Robert B. Gorsuch,

Civil and Mechanical, Steam and Hydraulic Engineer, Tabernacle Building, 340 Broadway, N. York. 18tr

S. W. Hill,

Mining Eng'r and Surveyor, Eagle River, Lake Superior.

D. Mitchell, Jr.,

Chief Engineer Pittsburg and Steubenville, and Chartiers Valley Railroads, Pittsburg, Pa.

Samuel McElroy,

Assistant Engineer, New York Navy Yard.

Mills, John B., Civil Engineer,

Sackett Harbor and Saratoga R. R., 24 William St., N. Y.

Saml. & G. H. Nott,

Civil Engineers, No. 6 Niles' Building, Change Avenue, Boston.

Osborne, Richard B.,

Civil Engineer, Office 73 South 4th st., Philadelphia.

Priehard, M. B.,

East Tenn. and Georgia Railroad, Knoxville, Tenn.

W. Milnor Roberts,

Chief Engineer Alleghany Valley Railroad, Pittsburgh, Pa.

Roberts, Solomon W.,

Ohio and Pennsylvania Railroad, Pittsburgh, Pa.

J. S. Sewall,

CIVIL ENGINEER,
ST. PAUL MINESOTA.

Charles L. Schlatter,

Chief Engineer Brunswick and Florida Railroad, Brunswick, Georgia.

Shipman & Hammond,

Civil Engineers, 63 Trinity Building, 111 Broadway, N. Y.

Straughan, J. R.,

Ohio and Indiana Railroad, Fort Wayne, Ind.

Shanly, Walter,

Chief Eng'r Bytown and Prescott Railway, Prescott, Canada.

Steele, J. Dutton,

Pottstown, Pa.

Charles B. Stuart,

Consulting Engineer, 23 William str., New York.

Edward W. Serrell,

Civil Engineer, 23 William st. New York.

Trautwine, John C.,

Civil Engineer and Architect, Philadelphia.

A. B. Warford,

Chief Engineer, Susquehanna Railroad, Harrisburg, Pa.

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AN excellent Transit made in DRESDEN and which cost there (where instruments are much cheaper than here) \$250, may be had for \$150. The standhead will need some alteration to adapt it to railroad purposes. Address Transit at this office. 6tf

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Illinois Central R. R. Co. FARM LANDS FOR SALE.

THE ILLINOIS CENTRAL RAILROAD COMPANY IS NOW PREPARED TO SELL OVER TWO MILLION OF ACRES OF FARMING LANDS, in tracts of 40 acres and upwards, on long credits and at low rates of interest.

These lands were granted by the Government to aid in the construction of this railroad, and include some of the richest and most fertile prairies in the State, interspersed here and there with magnificent groves of oak and other timber. The road extends from Chicago, on the north-east, to Cairo at the South, and from thence to Galena and Dunleith, in the north-west extreme of the State, and as all the lands lie within fifteen miles on each side of this road, ready and cheap means are afforded by it for transporting the products of the lands to any of those points and from thence to eastern and southern markets. Moreover, the rapid growth of flourishing towns and villages along the line, and the great increase in population by immigration, &c., afford a substantial and growing home demand for farm produce.

The soil is a dark, rich mould, from one to five feet in depth, is gently rolling and peculiarly fitted for grazing cattle and sheep, or the cultivation of wheat, Indian corn, &c.

Economy in cultivating and great productiveness are the well-known characteristics of Illinois lands. Trees are not required to be cut down, stumps grubbed, or stone picked off, as is generally the case in cultivating new lands in the older States. The first crop of Indian corn, planted on the newly broken sod, usually repays the cost of plowing and fencing.

Wheat sown on the newly turned sod is sure to yield very large profits. A man with a plow and two yoke of oxen will break one and a-half to two acres per day. Contracts can be made for breaking, ready for corn or wheat, at from \$2 to \$2.50 per acre. By judicious management, the land may be plowed and sowed the first, and under a high state of cultivation the second year.

Corn, grain, cattle, &c., will be forwarded at reasonable rates to Chicago, for the Eastern market, and to Cairo for the Southern. The larger yield on the cheap lands of Illinois over the high-priced lands in the Eastern and Middle States, is known to be much more than sufficient to pay the difference of transportation to the Eastern market.

Bituminous coal is mined at several points along the road, and is a cheap and desirable fuel. It can be delivered at several points along the road at \$1.50 to \$4 per ton; wood can be had at the same rates per cord.

Those who think of settling in Iowa or Minnesota should bear in mind that lands there, of any value, along the water courses and for many miles inland, have been disposed of,—that for those located in the interior, there are no conveniences for transporting the produce to market, railroads not having been introduced there. That to send the produce of these lands one or two hundred miles by wagon to market, would cost much more than the expense of cultivating them; and hence, Government lands thus situated, at \$1.25 per acre, are not so good investments as the land of this Company at the prices fixed.

The same remarks hold good in relation to the lands in Kansas and Nebraska, for although vacant lands may be found nearer the water courses, the distance to market is far greater, and every hundred miles the produce of those lands is carried either in wagons, or interrupted water communications, increases the expenses of transportation, which must be borne by the settlers, in the reduced price of their products; and to that extent precisely are the incomes from their farms, and of course on their investments, annually and every year reduced.

The great fertility of the lands now offered for sale by this Company, and their consequent yield over those of the Eastern and Middle States, is much more than sufficient to pay the difference in the cost of transportation, especially in view of the facilities furnished by this road, and others with which it con-

nects, the operations of which are not interrupted by the low water of Summer, or the frost of Winter.

PRICE AND TERMS OF PAYMENT.

The price will vary from \$5 to \$25, according to location, quality, &c. Contracts for deeds may be made during the year 1863, stipulating the purchase money to be paid in five annual instalments. The first to become due in two years from the date of contract, and the others annually thereafter. The last payment will become due at the end of the sixth year from the date of the contract.

INTEREST WILL BE CHARGED AT ONLY THREE PER CENT. PER ANNUM.

As a security to the performance of the contract, the first two years' interest must be paid in advance, and it must be understood that at least one-tenth of the lands purchased shall yearly be brought under cultivation. Longer credits, at 6 per cent. per annum, may be negotiated by special application. Twenty per cent. from the credit price will be deducted for cash. The Company's construction bonds will be received as cash.

READY FRAMED FARM BUILDINGS, WHICH CAN BE SET UP IN A FEW DAYS, CAN BE OBTAINED FROM RESPONSIBLE PERSONS.

They will be 12 feet by 20 feet, divided into one living and three bedrooms, and will cost, complete, set up on ground chosen anywhere along the road, \$150 in cash, exclusive of transportation. Larger buildings may be contracted for at proportionate rates. The Company will forward all the materials for such buildings over their road promptly.

Special arrangements with dealers can be made to supply those purchasing the Company's lands with fencing materials, agricultural tools, and an outfit of provisions in any quantity, at the lowest wholesale prices.

It is believed that the price, long credit, and low rate of interest, charged for these lands, will enable a man with a few hundred dollars in cash, and ordinary industry, to make himself independent before all the purchase money becomes due. In the mean-time, the rapid settlement of the country will, probably, have increased their value four or five-fold. When required, an experienced person will accompany applicants, to give information and aid in selecting lands.

Circulars, containing numerous instances of successful farming, signed by respectable and well-known farmers living in the neighborhood of the railroad lands, throughout the State—also, the cost of fencing, price of cattle, expense of harvesting, threshing, &c., by contract—or any other information—will be cheerfully given, on application, either personally or by letter, in English, French, or German, addressed to
JOHN WILSON,
Land Commissioner of the Illinois Central R. R. Co.,
No. 62 Michigan AV., CHICAGO, ILL.

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